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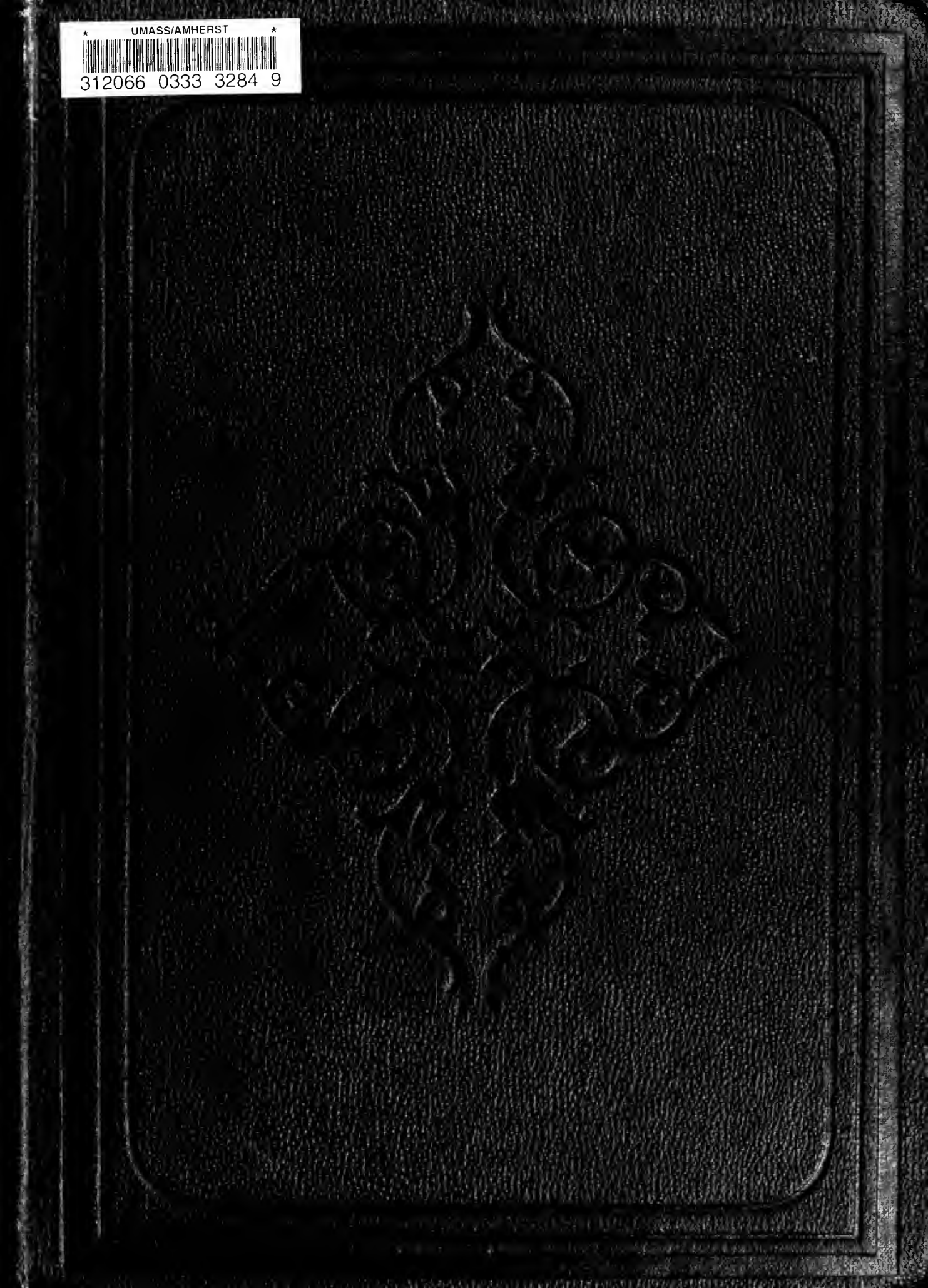

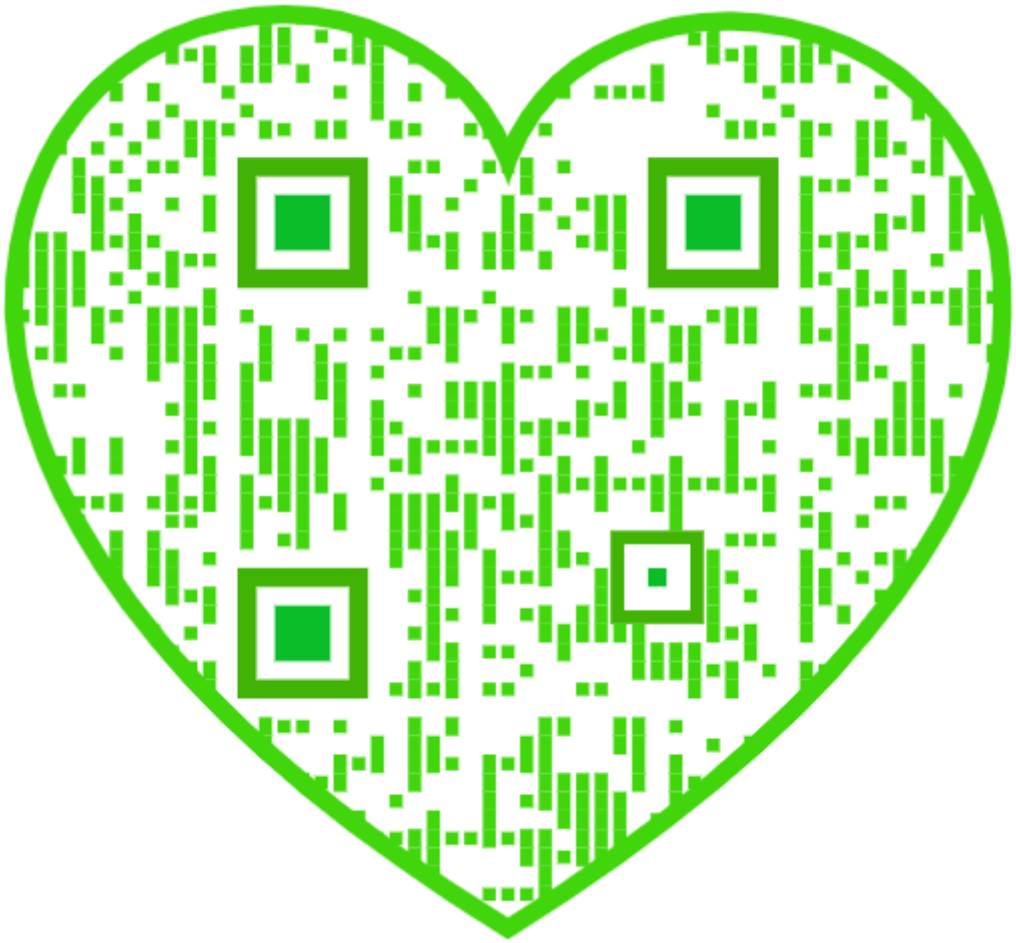

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THOMAS WILLIAM COWAN, F.G.S., F.R.M.S., ETC.

AUTHOR OF 'THE BRITISH BEE-KEEPER'S GUIDE BOOK.'

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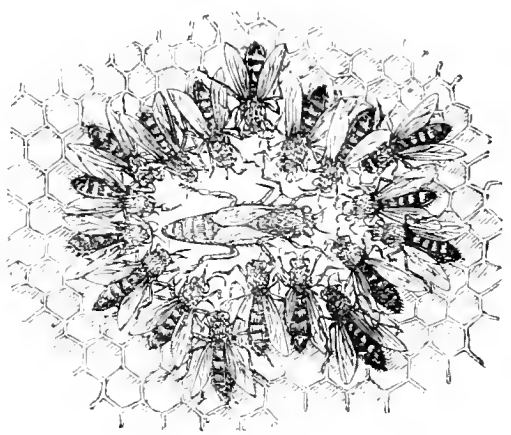

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Editorial, Notices, &c.

BRITISH BEE-KEEPERS' ASSOCIATION.

The next Quarterly Conversazione will be held at 105 Jermyn Street, on Wednesday, 18th inst. Members wishing to introduce subjects for discussion should communicate with the Secretary on an early date.

A RETROSPECT.

About to commence the labours and duties of another year, it seems desirable to cast a glance at the work performed during that through which we have just passed, to note the experience that has been gained, and to recognise the position bee-keeping now occupies.

Although the past year can in no wise be compared with that which preceded it, when the magnificent exhibition of honey and bee-appliances was held in South Kensington, and when we had the unique opportunity of practising international courtesies to the delegates from the bee-keepers in Canada, yet the year 1887 has been productive of good and varied work, and considerable progress has been made.

Several most important exhibitions of the products of, and aids to, bee-keeping have been held during the year; the principal of which have been held under the auspices of the Royal, and the various Counties Agricultural Shows. The intimate connexion between Agriculture, Horticulture, and Apiculture, has herein been recognised; and we have evidence that farmers and bee-keepers are becoming more bound to each other, and that the production of honey in the future will not be merely a pleasant pastime to the few, but a useful adjunct to the other occupations and industries of the farmer. A noticeable exhibition was held at Bury St. Edmunds in connexion with the Suffolk Agricultural Society Show, which created much interest in that district. The bee department of the Royal Agricultural Show at Newcastle fully maintained the prestige which bee-keeping had gained at previous exhibitions of the Royal. The entries were more numerous than on any previous occasion. A series of lectures were also given in that district, which, together with the exhibition, has given birth to an Association in Northumberland. The example thus shown by the Royal has been followed by the Lincolnshire, Hampshire, Norfolk, Glamorganshire, and others. Bee-keeping has also, by the action of the Association, found a place amongst the Co-operative body. The small exhibition of honey held in connexion with the National Co-operative Show at South Kensington has resulted in a comprehensive prize-list for honey and appliances being prepared for their next annual show, which it is proposed to hold at the Crystal Palace in the month of August.

The increased interest taken by bee-keepers in obtaining certificates for ability in the manipulation of bees is a hopeful sign, and has been a marked feature during the past year. The number of examinations throughout the country is steadily increasing. Nearly fifty candidates have presented themselves as anxious to obtain honours in the profession. Nearly thirty third-class certificates have been gained by successful competitors, one of these, we have much pleasure in mentioning, being a lady. A number of first and second-class certificates has also been awarded.

Considerable advance has been made in the perfection of bee-appliances; and although many of the improvements may be very minute the tendency of them is to make bee-keeping a more pleasing occupation, and, when connected with a knowledge of the management of the honey-bee, to render it more certain of success. We may also mention the greater attention which has been bestowed on the more gentle and humane mode of handling bees. During the year there has been a considerable demand for the Apifuge, a knowledge of the virtues of which is due to Mr. R. A. H. Grimshaw. This has been in a majority of instances a great success, and has proved of service in giving confidence to young beginners and to lady-bee-keepers. We have also heard much of, and can testify to, the value of the frames, sections, and crates invented by Mr. James Lee; but as these are scarcely yet launched on the public market it would be premature at present to do aught but mention them as inventions of the year 1887.

During the past year we have arrived at a more definite knowledge of the quantities and values of the honey and wax imported into the United Kingdom. This, when conjoined with the amounts re-exported to other countries, gives as the result that 1755 cwts. of foreign honey have been required to supplement the deficiency of production

to satisfy the wants of the British population; while in wax 20,108 cwts. have been required for the various industries in which it forms a part. To what degree these importations of honey and wax may be reduced depends on the energy and enterprise of the British bee-keeper.

We regret in this retrospect to have to notice that the year has not passed away without the loss of some who have in their time done the cause of bee-keeping good service. Amongst these we may mention Mr. Duncan Stewart, one of the most assidnous and energetic members of the Directors of the B. B. K. A.; and Mr. C. Fox Kenworthy, once Secretary of the B. B. K. A., and at the time of his death Secretary of the Middlesex B. K. A., a young man of great ability, and of singularly amiable and modest demeanour, who did much during the short time he was in office to revive the position of Middlesex amongst County Associations.

Amongst the features of the past year it becomes us to mention the visit of Mr. Cowan to the bee-keepers of Canada and the United States. This visit, we rejoice to say, has much gratified our Transatlantic brethren, and has cemented bee-keepers in both countries in a closer bond of interest.

The literature of the honey-bee has not been neglected during the past year. Mr. Simmins's *Modern Bee Farm* has been well received; Mr. Cheshire's work is now completed; a new edition of Mr. Cowan's *Guide-book* has been called for; and *Modern Bee-keeping* still maintains the high position it has always held in the estimation of bee-keepers.

The position of the County Associations, being a matter of the greatest moment to bee-keepers, has been dealt with in a separate comment.

The season of the past year has been peculiar; for some time the honey-flow was most plentiful, but it was brought to a stand-still by a long and continuous drought. This had a serious effect on the honey prospects of the southern portion of the kingdom, while in the northern parts of England and in Scotland the harvest was most propitious, and in many instances wonderful results were obtained.

In drawing these remarks to a close, we again desire to recognise the assistance we have derived from our numerous friends,—assistance which we trust may be continued towards us during the year on which we are entering, and we hope that the year 1888 may be one marked by prosperity and blessing to all bee-keepers.

COUNTY BEE-KEEPING ASSOCIATIONS.

Now that the organization of the British Bee-keepers' Association may be regarded as complete, and the County Associations fulfilling in a more or less active manner the functions assigned to them, the *internal working* of the latter and *their individual condition* may be a useful and timely inquiry. The thought is now and then expressed that 'the work for which they were formed has in a great degree been accomplished.' Meetings have been held generally all over the county, the expert has been his rounds year by year, shows have been held annually, and knowledge on the science of bee-keeping has been widely spread; the straw skep has been superseded, and the fact driven home that the old-fashioned bee-keeper has been left far behind. The question may now, therefore, not be out of season, and the consideration of it may throw light upon the more particular aims which the managers of County Associations should set before them.

That the spirit in the management of County Associations is on the decline there is evidence, and, had we the facts on which to speak more fully, we fear that the one instance on which we can speak with knowledge would not be an isolated one.

In an important county, and with a list of subscribers approximating to 300, we learn that, though its committee contains fifteen members, the business of the Association has been carried on by four only, two of whom have attended all the meetings summoned, and the other two have each attended once.

This, after due allowance made for inability to attend on the particular days fixed, and the difficulty of getting to the places appointed, cannot but be considered as unsatisfactory. In some other counties the circumstances, although differing, are not satisfactory. In one in the south of England all movement appears to have died out, while in another, more northward, the whole management seems to have fallen into the hands of the honorary secretary. That these are alarming symptoms of decline only very sanguine people can doubt, and to arouse attention to the malady and to seek to remedy it should, we think, be the immediate work of the Central Association. The present period of the year is well suited for the purpose of instituting a general inquiry into the working of the various Associations, and for the consideration of suggestions which might be applied during the ensuing season.

LANTERN-SLIDES.

We are pleased to find that Mr. Watkins, the Hon. Secretary of the Hereford Association, has devoted so much time and trouble in preparing such a selection of lantern-slides illustrating bee-keeping. Mr. Watkins has not only illustrated the natural history of the honey-bee, but has gone thoroughly into the processes and manipulation of the science in general. We notice many very interesting subjects, showing the various stages of bee-keeping, describing the modes of hiving, supering, extracting, &c., also a slide of a Swiss apiary, giving us an idea of our Continental friends' bee-hives.

The preparation of the slides is not quite satisfactory, some being rather out of focus, thus losing the crisp sharpness which is very essential for lantern work. The slides are generally too intense from over-development, consequently will not show a sufficiently bright transparent image on the screen. Had Mr. Watkins taken more care on these points, we could have pronounced them as a splendid collection. We should certainly recommend him to make another selection of transparencies to obtain a more perfect result.

AMATEUR EXPERT 'AT HOME.'

Readers of the *B. Bee Journal* will quite understand my feeling considerable curiosity about and a consequent desire to unearth (or smoke out) our genial correspondent, whom I had already met at our Conversazione. I therefore consulted 'the Sage,' whose kind offices as cicerone I was desirous of obtaining, for I hoped he would prove a 'jolly old buffer' (if he will pardon the expression) between 'A. E.' and myself, softening the impact and reducing the results of a collision to a minimum. My scheme, growing by contemplation, was advanced by the despatch of a tentative P. C. (post-card, not police-constable) on scout-work to ascertain if our friend would be at home. The defensive nature of the reply—just the monosyllabic 'Come' times, when unusually facetious, taunts us Saxons with being 'land robbers.' After serving a youthful apprenticeship in the cleanest and prettiest town of 'West Barbary' he has to choose his future path, and hesitates between London and Canada, for several of his schoolmates had emigrated and were sending home good reports from that colony. He, however, selects London, and (having started bee-keeping when six years old) it were perhaps as well he did so, or where might he not have been by this in the ranks of Canadian bee-keepers? Eight years' toiling hard at the bench, all his leisure filled in with mission and Sunday-school work, are cut short by an accident which necessitates two long spells and an operation in hospital. These tell on a constitu-

—was characteristic, we thought; it might mean anything, 'Come and welcome,' or 'Have at you.'

Express train from a London terminus took us to within four miles of where 'A. E.' had fixed his 'hive,' and upon that gentleman meeting us we were welcomed as bee-keepers *know how* to welcome their brethren.

The query, 'Is it to spy out the nakedness of the land ye are come?' being met by a reply that X-Traction was the mo[illegible] we were at home. Of course when we entered [illegible] e house we 'uncapped,' but there was no 'slingi[illegible] done, and the Formic-Aphidean process commenced. I question much if the umpire himself would not decide that it was impossible to determine which was Napoleon and which the Alps—which the ant and which the aphis—at the conclusion of the extracting. I leave you to judge, though, if I did not do well to glean what follows.

'A. E.' not forty, fair, and fairly fat, is—speaking as a poultry fancier—a 'Plymouth rock;'* a Cornish man, with a Cornish name, and a tread-on-your-Cornish nature if you attack him. I can assure you he is able to 'hold his end up' in a dispute. Being a Celt he sometion uome too robust, and drive our friend into fresh fields of enterprise—his present business, which he boasts is three miles from 'Civilisation,' *i.e.*, from butcher, baker, chapel, and post. He has been a life abstainer from alcohol, tobacco (Ah!), and the razor. (Some may understand me when I say there has been either a land-slip or a hard frost in the polar regions.) The Band of Hope and the Mutual Improvement Society in the neighbouring town give 'A. E.' scope for his superabundant energy, and he affirms that his happiest hours are spent amongst children. Children, alas! when I looked round for the bairns he told me with a husky voice, 'Our five are where pain and sorrow cannot come.' 'A. E.' lives by activity, and 'jots' for pure pastime, as a safety-valve for the escape of exuberant fun.

I spoke of poultry, and he informed me the secret of poultry-keeping lies in a few words: Avoid fancy breeds; never keep a cockerel two years in succession, but introduce fresh blood annually in the form of a stray young bird; do not keep laying hens more than two seasons, nor allow pullets to sit; for this purpose he reserves three-year-old hens. His hen-house is a picturesque affair, having a straw thatch; the warmth this affords and his general treatment provides him with large eggs and early spring chickens. When I say I extracted from him that he can forge iron, turn wood,

* I don't infer he keeps this breed, but was born at Plymouth, where they are said to be favoured with thirteen months annually of rainy weather.

iron and stone, carve and paint, gild and paperhang, do moulding and bricklaying, and even work in wool—specimens of all these I saw—you will admit that he is not only a 'jack-of-all-trades,' but I can testify he masters them too. His literary work gives you a fair sample. Roses and fruit trees, hives and hennery, winter packing (mattresses of bed-ticking, rammed, just too hard I thought, with cork-dust, sewn and wadded down), quilts edged with scarlet binding to prevent fraying, hives painted different colours, roofs covered with canvas and well painted—neatness, neatness everywhere.

A 'grand promenade' for bees, under and in front of hives, is made by battering down into a hard, flat surface what are known as 'breezes,' *i.e.*, the small cinders from a forge. This forms a sacrarium and reservation, absorbing and retaining solar heat, thus providing the bees with a warm, dry alighting ground. The central bee-house, containing six hives, is flanked by two straw-hackled skeps, reminding us that a hackle, like charity, covereth a multitude of sins. Outside these are two 18-frame Abbott's Combination hives, beyond which are six 10-framed, double-walled, home-made hives. The house is surrounded by a six-acre meadow in which hives were formerly kept, but in summer time the cows objected, and . . . . . Our friend takes great interest in his County Association, and has been county representative and local adviser for some years, lecturing at frequent intervals to both adults and children on our hobby. He was made 'A. E.' by the late Rev. H. R. Peel, who often met him on long trips with the bee-tent when certified experts were unknown, yet expert work he never took unless as a stop-gap, when professionals could not be obtained.

Fruit gardens on all sides, amidst clover and bean-fields, give the bees ample pasturage for the early harvest, and amongst the surrounding woodlands trees—sycamores, limes, and oaks—will yield their quota of honey in their season. A stroll in the adjacent park showed us wild thyme still in bloom on the bosses of verdure provided by old tree-stumps. This adds its strong pervading scent to the larger bulk of honey gathered from other flowers, and often, as is the case with labiates, presents us with a puzzle-blend which defies us to brand the honey with its origin. The lanes at every junction open out into large stretches of close green turf, highly suggestive of village-greens, and the hedges are so thickly covered with bramble-berries that we recognise another feeding ground. The bees have been here, and the blackberries show it; the oaks show it, too, for they are laden with acorns, a proof of mature age and insect (not wind) cross-fertilisation. At almost every step immense bushes are literally covered with crimson-scarlet fruit, and these, the seed-pods of the single rose, surely indicate insect visitation. The dazzling-shining hips vie with the autumn tints of the bramble-leaves, which run in a perfect gradation of colour, from bluish-purple through crimson, scarlet, orange, primrose, and lemon-green, into the pale-green and deeper shades of the still growing foliage. Here, too, are sloes and wild plums in fruit, whilst the masses of haws on the thorns testify that some one has had a good share of hawthorn honey, and that we must expect a winter of snow-covered ground. Thus does Nature anticipate the requirements of the fruit and seed-eating birds, and prevent their extermination. So, reader, you learn the tone and subject of our talk as we stroll about, regretful at the close of another season, yet cheerfully hopeful in the future.

With something like a sigh we leave the park, the fine ancestral elms and oaks, the bee-gardens amidst rustic homes, decked with the graceful festoons of the virginian creeper, whose leaves gleam with all the intermediate tints, from deep bronze to a weird living scarlet, as though 'the early frosts of winter' had pierced Auctumnus to the heart, her life-blood dropping from her breast upon the wreaths 'midst which she hid herself.

Long may 'Amateur Expert' and his good lady be spared to enjoy the grand gifts with which Dame Nature has surrounded their home! Long may his 'jottings' enliven the pages of the *B. B. J.*!—Ex-Tractor.

USEFUL HINTS.

New Year's Greeting.—With the advent of another year we offer a New Year's greeting to all our friends and readers. May it prove a happy and successful year to the great fraternity of bee-keepers wheresoever scattered over the surface of this terrestrial globe. In these days of steam and electricity the term 'isolation' has become obsolete, and the interest in our antipodean brethren is as great almost as in our neighbours. Would that we could exchange a portion of our fog and cloud for a little of their superabundant sunshine!

Progress.—Great strides indeed is the art of bee-keeping making in our day, and still must 'progress' ever be our watchword in every department of the science. *Apicultura floreat* amongst all 'nations, kindred, peoples, and tongues,' is the one wish of all our hearts whilst we earnestly strive to hold our own in the great world of apiculture. Great as the advance has already been, visions of future progress appear to us to loom in the future distance, as we read of English bee-farms with increased produce arising from the more perfect fertilisation by our bees, of the fruit grain and fodder crops of our at present sadly depressed agricultural interest. We must sow and water in hope, never forgetting that there is One, and One only, who can give the increase.

Weather—that universal theme of the Englishman—has, as we are told on all sides, become 'seasonable,' which at this time, we believe, implies severe frost and heavy snowstorms. The latter, we are truly thankful to say, have not visited *us*, although we hear from neighbouring localities reports of the action of steam-snow ploughs, clearing of roads, &c. Fifteen degrees of frost, kept up nightly for a few weeks, may be of great service to the land and to farming operations, and may also gratify the youthful yearning for skating pastime, and so we who would fain be spared such an ordeal must 'grin and bear it' in the hope that it may result in good to all, our bees not excepted.

The Standard Frame, established by the B.B.K. Association in 1882, as was to be expected, has met with unfavourable criticism at various times, but is now very generally adopted by all British bee-keepers. The point to which most objections have been raised is the length of the top bar, viz., 17 in. A short account of the establishment of the 'Standard' may, perhaps, interest our readers, reference being repeatedly made to it in the columns of the *Journal*. At the Annual General Meeting of the B.B.K.A., held at 105 Jermyn Street on February 15th, 1882, a resolution was proposed and carried unanimously, 'That it is desirable that the B.B.K.A. do set forth a *Standard frame*, stamped by its [illegible]tion and authority, with the view of bringing such frame into general use: its size and form to be determined by a Committee appointed for that purpose.' At the same meeting we read that, 'The following gentlemen—Messrs. C. N. Abbott, T. W. Cowan, F. Cheshire, J. G. Desborough, J. M. Hooker, Rev. G. Raynor, A. Neighbour, and Rev. F. T. Scott, were appointed the Committee to carry out the foregoing resolution.' On the 16th of March following this Committee held its first meeting at the Langham Hotel, when it was unanimously resolved: 'That the outside dimensions of the Standard frame be 14 in. long by 8½ in. deep, the top bar ⅞ in. thick, the bottom bar ⅜ in. thick, and the side bars ¼ in. thick. These dimensions not to refer to anything outside the rectangle.' At a final meeting of the above Committee, held at South

Kensington on August 4th following, it was resolved, 'That the entire length of the top bar be 17 in., allowing 1½ in. projection beyond the rectangle at each end of the frame.' This resolution was also carried unanimously. Also, on the same day, and at the same place, a General Meeting of the B.B.K.A. was held, at which it was reported by the Standard Frame Committee, 'That two meetings had been held, and it had been decided that the dimensions of the Standard frame should be in accordance with the resolutions,' as quoted above. This report, with its decisions, was accepted unanimously by the General Meeting, and a resolution was carried: 'That the work of the special Committee on a Standard frame be considered terminated.' Thus was completed, perhaps, the most important step of any taken by the Association for the advancement of bee-culture in this kingdom. *Pattern Standard frames*, duly stamped and labelled with dimensions, were issued by the Association at 1*s.* each, and were freely circulated through the country. It will be noticed from the above account, that no *width* of the four frame-bars was sanctioned, or even proposed, by the *Frame Committee*. Upon what authority, therefore, is the width stated to be ⅞ in. whenever the dimensions of the Standard frame are given? In Mr. Cowan's Book, p. 30, we are told 'the width of all the bars is ⅞ in.' And Mr. Cheshire in *Bees and Bee-keeping* (vol. II., p. 53) says: 'The width on all sides being ⅞ in.' In *Modern Bee-keeping* the width of the bars is omitted. It is true that the '*pattern frames*' were issued with bars ⅞ in. wide, but there was no *authority* for this width. Would it not be well that this point, of width, and the length of the top bar, should be reconsidered by the general Committee? Our own feeling is that the outer dimensions of the rectangle, having been once established, and most extensively used, should remain unchanged, after 'the law of the Medes and Persians, which altereth not;' but that the length of the top bars—or, rather, of the lugs, or ears—and the width of the four bars, should *not* be defined. As the matter at present stands, there is an uncertainty, which, we think, might be removed without reopening the question of the size of the rectangle. As regards the question of standard one and two-pound sections, we are strongly of opinion that the imposition of such standards would be decidedly detrimental to the advance of apiculture.

Inserting Foundation in Sections.—There is a complaint in the *American Bee Journal* of the 14th ult., by Mr. E. S. Eden—after reviewing the different methods employed to fasten foundation into section-boxes—'that no one has invented a machine to do the work satisfactorily.' He goes on to say 'that, of the many machines invented, not one has given general satisfaction—that if foundation is fastened by dipping it into a melted mixture, or by pouring wax along each side, to attach it to the section, it will be found that the guide, or the wall to the top row of cells, will be destroyed, and the bees will refuse to draw them out unless they are short of room, leaving a very imperfectly-filled section. But if the foundation is fastened neatly they will draw the top row out equally with the rest, leaving the section filled in a superior manner. The plan of fixing foundation by pressure has also its drawbacks, as it is almost impossible to make the foundation adhere firmly, especially if the section is smooth and full sheets are used. Some have adopted the plan of heating the section and pressing the foundation upon the heated surface, but this plan has generally failed from the non-adherence of the wax. It is doubtful whether the plan of fastening foundation by pressure will ever be developed sufficiently to give general satisfaction. There are so many conditions that are absolutely necessary to procure the best results, such as temperature of the room, pliability of the foundation, warmth of the section, &c., before the work can be performed successfully. It is to be hoped that some one of the many thousand bee-keepers will discover a plan that will give general satisfaction. Such a person would receive the thanks of every bee-keeper in the country.'

Let Mr. Eden rest assured that the plan has already been discovered, and patented, in the old country. Mr. James Lee's sections avoid every evil mentioned above; take full sheets of foundation, which are inserted while putting the section together in less time than any other section without heating, or smearing with melted wax without any machine at all; and from the foundation being stretched and tightly held in position, and the use of four-way section-boxes with slotted-dividers, the sections are worked and finished in the most perfect manner of any of which we have knowledge, after an experience of all kinds of section-boxes from the time of their introduction. We are informed that Mr. Lee has taken, or is about to take, out a patent for his invention in America as well as in England. Let our American and Canadian brethren take a note of this. Mr. Lee has also patented a brood-frame on the same principle as his sections, which, we feel well assured, will be the frame of the future, when it once becomes known. With one season's experience of these frames and section-boxes, we have not the slightest hesitation in pronouncing them *faciles principes* of any which have yet appeared to our knowledge.

Work for the Month.—Still we cry aloud, and say, 'Leave the bees severely alone during the present low temperature.' If necessity demands, supply candy, or Good's food, under the quilt, in mild weather, and in case of moisture flowing from the entrances a change of quilts—from damp to dry—is admissible, and, perhaps, a change of floor-boards, but all must be done as quietly and quickly as possible without jarring or disturbance of any kind. After this long confinement to their hives the least excitement will cause untold injury to the bees. If there be any suspicion of internal dampness it may be advantageous to raise the hive and floor-board an inch at the back and to wedge up the hive from the floor-board in front, sufficiently to allow the moisture to escape. We are supposing the hives to be on the 'right-angled system,' in giving these directions.

Breeding.—In strong colonies the queens will now begin to breed, and the consumption of stores will increase daily. We are well over the shortest day, and in well-conducted apiaries the busy hum of the work-shop, as well as of the hive will soon be heard in preparation for the impending campaign.

Preparations.—Hives, sections, crates, foundations, frames, &c., should be procured, and prepared for use whenever leisure affords an opportunity. As the spring months advance, the hives, with their colonies, will require all our attention in feeding, examining, uniting, and in other ways; hence, January and February afford more leisure, perhaps, to most, than any period of the year for preparing for the honey season. With milder weather bees, after their long confinement, will be eager for sanitary flights, which should be encouraged as much as possible, and on such occasions, let all be on their guard against the *tits*, ever anxious for an insect meal after their long deprivation.

ASSOCIATIONS.

BRITISH BEE-KEEPERS' ASSOCIATION.

List of successful Candidates at the Second Class Examination, 1887, in order of merit:—T. Badcock and J. Palmer equal, W. Coxon, J. J. Shipman, T. Austin, R. Woodward, J. White, F. Wilshaw, A. J. Brown, Mary E. Eyton, and B. S. Rawson.

HUNTS BEE-KEEPERS' ASSOCIATION.

The annual distribution of the prizes gained at the recent show in connexion with the Hunts Bee-keepers'

Association took place at the Fountain Hotel, Huntingdon, on Saturday, the 24th December. Col. A. W. Marshall, treasurer of the Society, occupied the chair, and presented the successful exhibitors with their awards. There were also present Mr. C. N. White (secretary), the Rev. H. S. Budge, Messrs. J. Linton, J. Howard, J. Howard, jun., Allen, Bull, Allpress, Hobbs, &c.

The Chairman said that on the notice paper convening the meeting it was stated that Mr. White would find it incumbent upon him to resign the secretaryship of the Association at the end of the year. They would be all very sorry to hear that. He believed, however, that it would be informal to settle the matter at that meeting, because resignations could only be accepted at the annual meeting. The consideration of Mr. White's resignation, and the appointment of a fresh secretary, if they could not prevail upon him to alter his determination, would therefore be discussed then. Mr. White's object in putting the matter on the paper was to give due notice of his intention, so that his resignation should not be suddenly sprung upon the Association at the annual meeting. The resignation would cause a universal feeling of regret, and they could only hope that Mr. White's decision was not irrevocable.

The distribution of prizes, a list of which we give below, was then proceeded with.

At the conclusion of the distribution, Mr. White said that perhaps it would be as well for him to state the reasons which induced him to give notice of his resignation. He felt utterly unable to continue the secretaryship of the Association. He sincerely regretted this, but he really could not continue to bear the expenditure of time and money to which he had been subjected since the formation of the Society some five years ago. If all the members knew upon whose efforts the carrying on of the Association's work had depended, they would sympathise with him in his present action. It would have been utterly impossible to have carried on the Association so far had it not been for the assistance of the chairman of their meeting that afternoon. He really could not continue to hold office under this state of things any longer. Then there was another reason which had induced him to resign his office. The Association was originally intended for the benefit of the cottager class entirely, but now, when soliciting for subscriptions, he was frequently met with the question, 'What are you doing for the cottagers?' The fact of the matter was, they had done very little for the cottagers since the formation of the Society, and they were doing very little for them now. While speaking in this strain, he did not for one moment wish it to be understood that he intended to infer that the Association had not done any good since its formation. On the contrary, he believed that it had. Huntingdonshire could now boast of some bee-keepers who would not in a competition take a very low place amongst the bee-keepers of the kingdom. Then, again, there was the fact that the county now had manufacturers of bee-keeping appliances second to none in the kingdom.

A short conversation followed on the points which had been raised by Mr. White; those who took part in it being the Rev. H. S. Budge, Mr. J. Howard, and Mr. Hobbs. The proceedings concluded with a vote of thanks to the chairman.

The following is a list of the prize-winners:—

Bees.—Best specimen of English bees, exhibited with their queen, in a unicomb observatory hive. C. N. White.

Hives.—The cheapest and most serviceable hive on the moveable-comb principle, for general use, with arrangements for taking surplus honey. 1, 7*s.* 6*d.*, J. H. Howard.

Honey and Wax.—Best 12 1-lb. sections of comb honey. 1, 7*s.* 6*d.* and silver medal, J. H. Howard, jun.; 2, 5*s.*, A. Sharpe; 3, 2*s.* 6*d.*, J. Linton.—Best 6 2-lb. sections of comb honey. 1, 5*s.*, E. Allen; 2, 2*s.* 6*d.*, Rev. J. F. W. Trumper.—Best exhibit of comb honey (not sectional). 1, 7*s.* 6*d.*, J. Linton; 2, 5*s.*, E. Allen; 3, 2*s.* 6*d.*, Mrs. Allpress.—Best 12 1-lb. bottles of run honey. 1, 7*s.* 6*d.*, Rev. C. C. James; 2, 5*s.*, E. Allen; 3, 2*s.* 6*d.*, J. Linton.—Best sample of beeswax (in one cake, not weighing less than 3 lbs.). 1, 5*s.*, Rev. C. C. James; 2, 3*s.*, Rev. H. Gee; 3, 2*s.*, E. Allen.—*Cottagers only.*—Best 12 1-lb. sections of comb honey. 1, 7*s.* 6*d.*, B. Bull; 2, 5*s.*, F. Whybray; 3, 2*s.* 6*d.*, R. W. Allpress.—Best exhibit of comb honey (not sectional). 1, 7*s.* 6*d.* and certificate, Z. Hobbs; 2, 5*s.*, B. Bull.—Best 12 1-lb. bottles of run honey. 1, 7*s.* 6*d.* and bronze medal, R. W. Allpress; 2, 5*s.*, B. Bull; 3, 2*s.* 6*d.*, C. Colbert.—Best sample of bees' wax (in one cake, weighing not less than 3 lbs.). 1, 5*s.*, C. Colbert; 2, 3*s.*, Z. Hobbs; 3, 2*s.* B. Bull.

NOTTS HONEY FAIR.

After a lapse of two years the honey fair in connexion with the Nottinghamshire Bee-keepers' Association was revived on Friday and Saturday, December 16 and 17, with encouraging prospects. Messrs. Morris and Place kindly lent their auction mart in Bridlesmith Gate, Nottingham, for the purpose of the display, and very considerable interest was shown in the proceedings by those interested in the work of the Association. There were over twenty exhibitors. The British Bee-keepers' offered a silver medal for the best six 1-lb. sections, a bronze medal for six 1-lb. jars of extracted honey, and a certificate for a bee-glass of honey, for which there was a keen competition. The judging took place on Thursday night, the awards being made by Mr. Henry Yates, of Grantham, and Mr. Godfrey, of Lambley. Mr. William Silver, of Bridge Gate, Retford, won the principal medal with some excellent sections. The bronze medal went to the Rev. R. A. McKie, of Farnsfield, and the certificate to Mr. G. Caparn, of Newton, who exhibited a bell-glass of 75 lbs. of excellent honey. The arrangements have been efficiently carried out by Mr. F. W. K. Fisher, of Farnsfield, the honorary secretary of the Association. Wax, of which there was a small supply, was selling at 1*s.* 8*d.* per lb. The exact quantity of honey staged was 207¾ lbs. and of wax 13½ lbs. A comparatively small quantity of the honey staged was sold, considerably more than half remaining. Prices, which on the first day were quoted at 1*s.* and 1*s.* 6*d.* per lb., fell to as low a rate as 8*d.*, 9*d.*, and 10*d.*, both for run and comb honey retail, and 6*d.* wholesale.

The Langstroth Book.—Concerning the revision of this book and its publication next spring, Mr. M. M. Baldridge, of St. Charles, Ills., writes us as follows:—'The following extract from a letter from Dadant & Son, dated November 30, received by the writer, may be of interest to all the readers of the bee [illegible] and so unknown to them. I take the liberty of [illegible] public, trusting no harm, but much good, will ensue in doing so. "The revised work of Father Langstroth will probably be ready by next spring, and, judging from the number of inquiring friends, we anticipate a ready sale for it. As soon as it is ready for the press, or rather for sale, the readers of the bee-papers will be duly informed by extensive advertising. We have been delayed in the revision of the work by different causes, independent of our control, but we think we have now overcome all the obstacles, and that the balance of the work will soon be completed.' The revision of Father Langstroth's book is certainly in the best of hands, and I sincerely hope that Messrs. Dadant will be able to give us the opportunity to peruse it by the time indicated.—*American Bee Journal.*

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.*' *All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

A NEW ARTIFICIAL COMB.

[1407.] I have been successful in producing a new artificial comb. I made this invention two years ago, and the comb was subjected to a practical test on a pretty large scale last year, and again in the present year. My artificial comb is no work of fancy, but the result of continuous and careful observation of the bees suggested by a remark of Gravenhorst which I came across in the second and third editions of *Der Praktische Imker* (the *Practical Bee-keeper*), and which I find has been reproduced in the latest improved edition of this work.

This remark prompted me to make experiments, the more so as I was not satisfied with the contrivances generally employed for excluding the queen from a portion of the combs, my idea being that the queen should be able to move freely over all the combs in the hive, and yet be prevented from using certain combs for breeding. I constructed an entirely new artificial comb, different from any hitherto in use, and the workers completed it quite satisfactorily, and in accordance with my indications. Trials on a large scale have also proved most successful, and the large increase of honey harvested by me this season is mainly due to my having used these new combs. Many more tons of honey would be obtained if my combs were in general use. With my new combs my sole aim in future will be to let my bees gather honey only.

I shall be prepared to make my invention known at once if bee-keepers on their part are willing to compensate me for the outlay incurred and the time I have spent on these experiments.

In order to enable bee-keepers to manufacture their requirements of such combs for themselves, I have started a subscription to a pamphlet in which my experience, as also the manufacture of the combs and the mode of using them, shall be described. Any one who engages to buy from me such pamphlet at the price of 1*m.* 50 *l.* (1*s.* 6*d.*) will in due course receive a copy post paid, in case I can get at least a few thousand subscribers. The pamphlet would be posted to all subscribers on the same day.

This, I think, is the cheapest way for bee-keepers to take advantage of my invention, for which in that case I should not take out a patent. But no time should be lost if bee-keepers are desirous of having the new comb ready for use by next spring.

The pamphlet may be ordered by post-card or through bee-keepers' Associations, and the order once given remains binding. I will announce in the *Bee Journal* the date when payment is to be made, which will be when the pamphlet is ready to be posted.—H. KOERBS, *Teacher and Organist, Berka on the Ilm in Thuringia, November*, 1887.

From the *Deutsche Illustrierte Bienenzeitung.*

We have frequently expressed the opinion that artificial combs might possibly become of importance to bee-keepers, as it would perhaps be possible to construct them in such a manner as to exclude the queen from the space reserved for the storage of honey, and thus to restrict breeding. This now appears likely to be realised. Mr. Koerbs, of Berka on the Ilm, in Thuringia, wrote to us a short time ago: 'Prompted by a remark which I had read somewhere, and after careful study in the apiary, I have succeeded, by means of a comb specially constructed by me, in dispensing with the separating board, as far as the obtaining of honey is concerned. The advantages I claim for my artificial combs are:

'1. They are made of pure wax by means of the Rietsche press, and are not used by the queen for breeding, even if the combs are inserted in the brood-nest.

'2. They are very durable.

'3. The most delicate combs will stand the employment of full force in extracting the honey.

'4. The honey is extracted very quickly, the operation scarcely requiring half the time it takes to empty other combs.

'5. In bad seasons these combs remain empty, not being used for breeding, and there being, unfortunately, no honey to collect.

'6. The bees do not carry pollen into these combs.

'7. The separation of the honey compartment in the hive from the brood-nest becomes superfluous.'

Mr. Koerbs promises a good deal. What Dzierzon often imperfectly realised by means of his diamond rule, and others by means of a division-board, Vogel's canal, or by merely moving the combs together more closely, may now be obtained more easily and in a more natural way by the use of Koerbs' artificial combs. Mr. Koerbs has been known to us for a long time as the fortunate inventor of the frame machines which go by his name, nevertheless we were not over sanguine in regard to his latest invention. But as he offered to give us particulars of his invention if we would give him our word of honour not to divulge his secret, we complied with his desire, and asked for full particulars, which were readily supplied to us: and in addition we received one of Koerbs' artificial combs completed by the bees from which the honey had been extracted several times. How simple a matter it appears! It is, indeed, another case of the egg of Columbus, and it seems strange the idea has occurred to no one before. Nobody by merely looking at Koerbs' artificial comb, as put up by us, will see anything particular in it, but when you take it into your hands and have a little explanation given you, the importance of this invention becomes at once apparent. If this new inveution should accomplish only half of what Mr. Koerbs expects it to do, we shall undoubtedly see a great revolution in the manufacture of artificial combs, as well as in bee-keeping generally.—C. J. H GRAVENHORST.*

[We received the enclosed notice of a new artificial comb, with a request to give an opinion on it, and a promise to send us a sample comb if we would undertake not to divulge the secret. This we undertook to do, but pointed out that we thought British bee-keepers would look with suspicion upon the method employed to make the invention known, and suggested a simpler method. The inventor prefers now to keep the idea secret, so we give the opinion of M. Gravenhorst upon it, taken from the *Deutsche Illustrierte Bienenzeitung*. If, as there stated, the invention would be a valuable one, it would be a pity if some method could not be devised to bring it into the market other than the one of collecting 1*s.* 6*d.* from each bee-keeper previous to sending out the pamphlet. Why does not M. Koerbs sell his invention to some foundation manufacturer, and introduce it in that way, or take out a patent and charge a small royalty?—ED.]

* We are indebted for the above translation to Mr. H. Dieck, the joint translator, with Mr. Stutterd, of Dzierzon's *Rational Bee-keeping*.

BEE-KEEPING IN PALESTINE.

[1408.] There is only one way to enter the 'land flowing with milk and honey.' According to mythology, Andromeda was exposed on the rocks lying out before the town of Jaffa to the seaside, forming a small harbour for little sailing vessels, and was delivered by Perseus from the sea monster going to devour her. It is wild enough the entrance to this town. I have been standing on the shore looking out for friends coming back from France and England, have seen them fighting their way through the angry sea, and exposed to the waves carrying the boats high up to the top and down again into a deep gulph of water hiding them from sight. Why don't they choose an easier way? The steamer can come no nearer for the rocks which abound here. It is always a terrific sight to see travellers and pilgrims landing. Yet after having travelled so many days and nights, it is only a mile on the raging sea to touch the Holy Land. It is here the prophet Jonas found a ship going to Tarshish, embarked for that place, and was seized by a tempest. Joppa of the ancients, now Jaffa, is the port of Jerusalem. It is here that numbers of bees are kept, both in the original way of keeping them, *i.e.* in clay pipes, and in Langstroth hives, kept only by your humble servant.

Although Palestine is acknowledged by many authorities to be the real home of the honey-bees, and although we never read in the Bible of bee-keeping, yet, very often we read of the 'land flowing with milk and honey' promised to Moses. Some writers on Palestine are mistaken when they mention wild bees as more abundant than the domesticated ones, because, in Psalm lxxxi. 16, the Lord promises honey out of the rock; this is only to illustrate the abundance in saying, 'Even out of the rock shall I fill thee with honey.' In nowise was it meant that the honey out of the rock was more abundant than the honey out of domesticated hives. Although it is possible run-away swarms were more secure from the interference of man before the invention of gunpowder, because they could not easily be had without breaking the rocks, yet certainly they did get some, or else it would not have been mentioned. Very likely the Canaanites kept bees in the same way as the Arab population of Palestine, partly their descendants. All Eastern invasions were followed by a retrograde movement, agricultural, architectural, industrial, &c. We know that the Canaanites had chariots and highways, but nowadays an Arab is astonished to see a chariot, introduced only about eighteen years ago from Europe; and, to use their own expression, it is a 'thing moving along with nothing but two horses in front to drag it.' They had oil-mills exactly the same as now. The invasions destroyed arts and sciences, whilst the weaker inhabitant of the country was always more or less abandoned, and continued in his primitive industry, thus carrying throughout more than thirty centuries household and agricultural implements without the least improvements, and in many cases carrying the very name throughout all the generations, notwithstanding the change of languages from the Canaanites, Hebrews, Greeks, Romans, Arabs, Latins to Turks and Arabs again. Go to an Arab village, and you will find women grinding at the mill, either alone or as illustrated in Matt. xxiv. 41, 'Two women shall be grinding at the mill.' The mill is small, and can easily be transported. Two women sit down on each side of the mill (the upper mill-stone having a handle with just place enough for two hands) thus driving the mill, and singing a monotonous, solemn song of their departed loved ones and friends. It is to be concluded that the aborigines of this country kept bees in the same way as the inhabitants now do, by comparing the above.

Honey was always abundant in Palestine. I mean real bees' honey, gathered from flowers of all kinds abounding in the land, the almond, pear (our largest crop), the orange-blossom, and the cactus; and in summer time when everything seems dry, the sesame (from the seeds of which the oil of sesame is produced, and used to a great extent in the country), and the labiate flowers, from which still the very highly flavoured and high-renowned honey of Hymettus was gathered from thyme-blossoms. Though some travellers tried to illustrate the fact of honey flowing from the trees, it is in no way common, for the want of trees or forests; and in the case of Jonathan, I Sam. xiv. 25-30, the honey was not dropping from the trees, but was flowing upon the ground, according to the new version; and, furthermore, Jonathan dipped his rod in a honey-comb, thus it was no honeydew, and he said: 'My father hath troubled the land; see, I pray you, how mine eyes have been enlightened because I tasted a little of this honey. How much more, if the people had eaten freely to-day of the *spoil of their enemies* which they found?' The Israelites came on the encampment of the Philistines, and suddenly fell on them. They overthrew everything, and the honey, kept in jars or he-goat skins then as nowadays, was overturned by the frightened cattle and soldiers, and was *flowing upon the ground.* The honeydew is only found in some trees, but in no locality that I know of will it yield honey enough to give anything more than a taste to bees in search of water or pollen during the intermediate months of the honey flow. In the Jordan Valley no bees are kept, because the nomadic Arabs only live here, and never trouble themselves in their wanderings with bees.

I dare say, except orange-trees and cactus-plants introduced here, the other honey plants have always been here, and the country yielded honey in quantity sufficient to form an article of export (Ezek. xxvii. 17). Honey was translated from the Hebrew 'dabash,' the real old name for honey. The Arabic word for honey is 'assal,' whilst a treacle made of the juice of grapes and boiled is called 'dibs' or 'dibes' in Arabic, wherefore many writers suppose that the honey so often mentioned in the Bible was not bees' honey but this dibes or grape-treacle; but when we read in Judges, xiv. 8, 9, that there was a swarm of bees (daburin) and honey (dabash) in the carcass of the lion, and that Samson took thereof in his hands and went on eating, it leaves no doubt as to the identification of 'dabash' with honey, and can therefore be applied to most other instances of 'dabash' as bees' honey, excepting a few cases, as in Job, xx. 1. 'Brooks of honey' were most probably meant for the grape-treacle, as can easily be understood if you bear in mind that grapes still are pressed out in pits cut into the rock, and flowing from one pit to another for purification, which was the method used thousands of years ago, and certainly never applied in the use of honey, because of robber bees and the thickness of honey too much would thus be wasted. The thinner treacle can easily be taken out of the rock again without much waste. And again, this 'dabash'—bees ney—was collected by the bees (daburin), and not the nets, as suggested by some; hornets are now called 'dababeer' plural, and 'dabur' the singular Arabic. The mixing up of the two names is comprehensible when we remember that the root of the word, 'dabr,' signifying 'the buzzer' or 'buzzing,' was given to all Hymenoptera and Neuroptera, and was only distinguished later when civilisation came in, and Arabs called the common fly 'dibaan,' the hornet 'dabur,' and the bee 'nahlé,' so with the sweets 'dibs' or 'dibes,' the grape-treacle, and 'assal' honey.

In almost every village of Palestine and Syria bees are kept, and, with a very few exceptions, they do not keep such numbers to depend upon them for their living, but simply a few hives placed one on the top of the other, having an arch built over them or some protection intended to keep away the hot sun rays, which in summer time would melt the combs but for the

protection. The clay pipes are very cool as long as they are kept in the shade, but as soon as exposed to the sun become fearfully hot. In winter time the accumulation of the hives keeps them warm in the first place, and again nature helps itself, for any swarm unable to winter is destroyed in the course of the autumn by different enemies abounding here as in all other countries. The hornets, the wax-moth, the tellio-aganide, and gecko abounding here, and the bee-eater, being the most dangerous ones to be named.

In general, bee-keeping is carried on in very primitive and negligent ways in some respects, as weak swarms are never cared for, all such swarms are left over to themselves. The good swarms with plenty of food and bees only successfully pass the winter, thus establishing a good stock on one hand, whilst on the other weak swarms could be united, thus constituting a strong one. The only work performed is in the swarming season, when swarms are watched for a few weeks in April and May, and hived into clay cylinders. The back covers are put on after hiving, and besmeared with wetted argillaceous earth. The interior is rubbed with citron leaves, and the small flying hole stopped with a few herbs for a day or two. They are then released, and not again looked to till the honey-crop. In some localities honey is taken twice, gathered from the early flowers and in September. The more general honey harvest is the September crop. The covers are then hastily broken open, a few puffs of smoke from the pitcher-smoker (and it is a pitcher with a hole in the bottom, filled with manure; some burning coals are put into it, and by continual blowing the smoke is kept going) are blown on the bees, a comb or two of honey is cut out and put away, the cover is immediately replaced, and the bees are left to themselves for a whole year. In such apiaries the moth is the worst enemy, destroying numbers of bees yearly. In the watered localities or such as afford good food for the carnivorous hornets the bees suffer greatly by them. They are the only enemies against which the inhabitants use their skill; they burn heaps of manure in front of the hives, keeping up a smoking for several weeks, from September to the beginning of November, which keeps the hornets out and the bees in.

The Palestine bees are good honey-gatherers, and the queens are very prolific and beautiful. It is not rare to have colonies yielding upwards of 100 lbs. for a single crop, though it is not the average. This is for bees handled in Langstroth hives—our system. Excepting during the orange-blossoming in April, our bees can be handled without a veil, the strong perfume at that time filling the air renders them fierce. Have any of your correspondents any experience as to the reason why bees are fierce, influence of weather, scent of flowers, &c? With us the east winds render the bees angry, and the strong odour of orange-blossoms makes them fierce.—PH. J. BALDENSPERGER, *Jaffa, December 7, 1887.*

BEE-HUNTING IN CANADA.

[1409.] In a recent issue of your paper, one of its readers desires to know whether Mr. Cowan went 'bee-hunting' while in this country, and expresses the hope that he will give an account of the exciting sport, if he did engage in it. I doubt if Mr. C. went bee-hunting while here in the sense your correspondent looks upon it. If he did not hunt bees, he hunted bee-keepers, and threw all his energy into the work. He reminded one of a chased ostrich striding across the country with its wings up. I do not know to what extent bee-*hunts* are now indulged in in other parts of this continent, but I know they have gone out of fashion in this section of Canada, and I hear little or nothing of them from other parts of America. I have often wondered why this is so, and have come to the conclusion that the altered condition of things makes the chances of success much less than they were years ago. If bees that made their homes in the hollows of large trees in the early history of this country were escaped swarms, and the offspring of escaped swarms from the primitive apiaries of early settlers, they must have been a much hardier race than those now generally kept. If this was not the case, there would be a hundred 'bee trees' in the country now for one there was thirty years ago.

Thirty years ago there might be found in every settlement a skilled and successful 'bee-hunter,' who rarely failed to bring home his buckets full of honey from the woods with every returning autumn, but I have not known of a bee-tree to be cut down for the last ten years, and yet there must be a hundred swarms that take to the woods now for every one there was thirty years ago. I think the inference to be drawn from this is that the black bee of former years, being acclimatised, survived the winters better than the Ligurian crosses that now prevail. There may be still another reason in the altered condition of the country. In those earlier days the greater part of this province, at least, was a dark, unbroken forest, with here and there the light of day let into it by the early settler's little 'clearing' that surrounded his 'log shanty,' or more frequently a series of such openings made by bands of pioneers who took up their 'locations' in the same neighbourhoods, becoming the nucleus of settlements long since extended to meet other settlements at a greater or less distance, till ultimately becoming broader and wider they organized themselves into municipalities. So the settlements grew into townships and counties, and the original forest diminished as they grew, till to-day many of the farms have not enough of the original timber standing upon them to supply their owners with fuel. Thus the face of the country became denuded of its timber and more exposed to the influence of wind and weather, materially altering the climate of the country.

I can well remember over thirty years ago spending two winters taking out timber in one of the most magnificent pine-forests in the country. The temporary homes of the workmen were rudely-constructed log-cabins, the interstices between the logs being stuck full of chips and moss taken from the dead trunks of fallen trees, and daylight streamed in through many an opening in the walls. To enjoy oneself through a Canadian winter in such a home will seem almost incredible, yet I look back on those two winters spent in the woods, remote from the permanent habitation of man, as amongst the pleasantest and most enjoyable of my life. It is true, it was sometimes cold, but not a breath of wind stirred the air. The solemn stillness of the place was broken only by the sound of the woodmen's axes, or the gentle sough of the wind as it passed through the tops of the stately pines and bent them over in a dignified bow; but its influence was never felt below, no matter how it raged above. When snow fell it filtered down through the canopy of pine needles, and fell as dry and as fine as flour. There was no broken time from stormy weather to the workmen in the woods in those days.

A hollow pine was the favourite home of the bee. These nests were usually ten or more feet from the roots of the tree, and at the top of the cavity. The entrance to it was, generally speaking, a small knot hole or 'punk' hole. These cavities were always dry, and not usually more than from six to ten feet long. There was certainly no upward ventilation, for the tree was invariably a solid body above the nest, while the outer shell was intact, except the aperture that served the bee as an entrance place. From the quantity and condition of the combs found in many bee trees it is clear they had been occupied for years, which would go to prove that the conditions under which the bees existed were favourable to them. That they cast swarms which took possession of other trees is also obvious, for they were frequently

found in places many miles away from settlements where bees were kept.

It is said the honey bee is not a native of America. If this be so, the early importations into these parts must have been a hardy race, for they adapted themselves to their surroundings, and survived the rigours of the climate, in a way that is surprising. Whether they have become extinct in the woods, I know not. It is certain their progeny exists in our apiaries to this day. I think, however, the changes they have undergone by being crossed with other races have lessened their 'staying powers,' or the changed condition of the country has removed the protection necessary to their existence. I believe that most, if not all, the swarms that escape to the woods now-a-days perish through the winter. If it was otherwise, we would hear more of bee-hunts and bee-trees than we do.

In 1857 I became acquainted with a Scotchman who was an expert and successful bee-hunter. The first honey I saw in America was with this man. I went to his house one day when he showed me two tubs and several buckets filled with comb and honey—the result of the previous day's work in the woods. He had a barrel of vinegar which I tasted, and my recollection is it was very good. He told me it was made from the honey refuse. I enjoyed the acquaintanceship of this man until he was accidentally drowned. He was the most successful bee-hunter I ever knew. His *modus operandi* was to put some honey into a tin box, and upon the honey he poured a little oil of aniseed. With this he would go into the woods. Arriving at the place where he intended commencing operations he uncovered the box, set it upon the ground, and seated himself on a log hard by. Here he waited till a bee came along, and filled itself with honey from the box. When it took wing he watched and followed the 'bee line' for some distance, when he again uncovered the box, set it down, and waited for other visitors. If the second visitor struck off on the same line as the first, he felt certain they belonged to the same colony. He then moved on, repeating what he had done before until he came to the tree, which his practised eye generally enabled him to find. It sometimes happened that the bee when released would fly in the opposite direction to that of his former visitors. If its flight was on the same line as these, he knew he had passed the tree, and would retrace his steps till he came upon the tree he sought. This man told me he rarely ever got his first bee more than two miles from its home, which is, I think, some evidence of the length of their flight. The tree having been found and marked, he returned home for the necessary assistance to fell it and take away the stores. This sketch of how bees were hunted in those days may afford some satisfaction to your correspondent on a subject in which he appears interested.—R. McKnight, *Owen Sound, Ontario, December* 19, 1887.

MARKET PRICE OF HONEY.

[1410.] There are two points which have frequently been alluded to of late in your columns, but, so far as I know, without any practical result. The first is that many bee-keepers are unable to find a market for their honey. The second is the suggestion that you should publish the market price of honey. The latter, in my opinion, you have hitherto been unable to do, from the simple fact that up to the present time there is no such thing as a market price for *British* honey. We must then direct our attention to finding a solution of the first point, viz., 'How to find a market?' and it is with regard to this that I wish to make a suggestion, viz., Let us have have periodical (say, monthly) auction sales of British honey in London. If bee-keepers would combine, so that a fair quantity of British honey could be offered for sale at one time, this could be managed. It is with a view of eliciting the general opinion and estimating the amount of support which would be accorded to such a plan that I invite replies from bee-keepers and dealers to the following questions:—

1. What amount of honey (extracted or run) are you prepared to offer for sale now and from time to time?

2. Are you prepared to assist, by making the sales known to possible purchasers or friends?

3. What day and what hour would be most convenient to you?

Bee-keepers will naturally want to know what expense they would incur on the honey they might offer for sale. I think it probable, if sufficient promises of support were received, I could arrange for a charge of five per cent upon the selling price or limit, to include brokerage and warehouse charges. There would also, necessarily, be a small charge towards cost of advertisements announcing the sale and postage. Beeswax might also be included in these sales. My premises being near Mincing Lane are suitably situated for London buyers and the trade, and I shall be pleased to place them at the convenience of bee-keepers if they think well of the above plan.—Herbert P. Fatt, *Proprietor of the British Bee-keepers' Stores, 6 George Yard, Fenchurch Street.*

SCRIPTURE TEXTS.

[1411.] In answer to R. R. Godfrey's 'Scripture texts,' I sometime ago wrote them all out and found sixty-one of honey and honeycomb, three of bees, two of wax, and one hornet. I have two corrections to make in his list. Instead of Deut. xx. 9 it is xxvi. 9, 15. Also instead of 2 Sam. xviii. it is xvii. 29. The undermentioned are the additional ones:—

Honey.—2 Chron. xxxi. 5.
Honeycomb.—Prov. xxvi. 7.
Bees.—Deut. i. 44; Isa. vii. 18.
Wax.—Ps. lxviii. 2, xcvii. 5.
Hornets.—Deut. vii. 20.

F. M. Spaulding, *Rusthall, Tunbridge Wells.*

[Mr. Godfrey has pointed out the above corrections. Mr. J. A. A. Wood, of Newport, Isle of Wight, has indicated one of the above corrections, as also one of the additions.—Ed.]

WINTER PACKING.

[1412.] My plan of packing is more simple than 'Amateur Expert's' of December 29, page 568. I neither use chaff, cork-dust, nor quilts, having calico cover on and observatory feeder. I take my floral shading, the extra strong brown which I get from Sutton & Sons of Reading, and instead of hanging it up for the winter I pack it between sides of hive and on top of frames and fill up to top. I have a few squares of heavy plate-glass and I put them on to keep all down tight. The only fault is that is too warm; as soon as the temperature is fifty degrees my bees come out and have a good airing and cleansing flight. I may say the shading is always dry, no mouldiness or damp. You see by my plan I don't require a sewing machine and am independent of help. Don't think I am a bachelor; I have a family hive. In conclusion, Mr. Editor, the *Bee Journal* gives me honey all the day. Wishing you a happy new year and success to the *Bee Journal*,—T. H.

[Be pleased to forward the communications mentioned.—Ed.]

DO BEES SELECT A HOME BEFORE SWARMING?

[1413.] We have always regarded the statement, frequently made, that before leaving the apiary, if not before leaving the hive, bees have a new home selected if not fitted up, as a tradition that might, and again might not, have a basis of fact. We had an opportunity last week to see for ourselves, or rather to get our

information from first hands, and under circumstances that left no opportunity for mistake.

On Sunday Mr. Vance, the manager of our creamery farm, discovered bees clustered under the window-sill of his bedroom. There were but few of them, probably half a pint, and they seemed to go in and out of a very small crevice where the weather-boarding had shrunk from the sill. He concluded this must be the traditional committee of investigation appointed by whatever power rules in the bee-hive, to find out whatever *good* lay before them and report. The committee stayed all Sunday forenoon, and spent the night and the next forenoon. The bees were Italians of a brighter and better colour than any in our apiary, and hence were clearly strangers. The next afternoon, while Mr. Vance happened to be watching them, a large swarm of bees of the same colour came in from the north-west and immediately began to cluster and enter the aperture in the siding. By prompt and efficient use of the smoker they were driven out, the hole closed and the bees clustered on a tree and were hived. We know of no bees of the quality nearer than nine miles to the north-west.

This seems to us a demonstration that bees select their home. This committee had evidently reported a land of promise near the alsike, white clover and linden, and had sent back a good report of the land as well as guides to bring on the colony. There seems to have been some misunderstanding, however, as about the same number of bees remained clustered on the spot after the swarm was hived, and remained there till Thursday, evidently supporting themselves by foraging in the fields till we took pity on them and allowed them to go to their chosen home.

The same day another investigating committee selected a similar place in a neighbour's house, and the next day one of his neighbours had a swarm of bees come off and leave. He followed them directly to the spot where the committee had all things in readiness.

What now is the governing supreme power in the bee-hive? It is certainly not the queen. She is simply the mother-bee, and at the time the swarm leaves the hive may be but an infant of a day. Nor is it the drones, who are born to serve a brief purpose and then murdered. In the case mentioned there is a search for a location, the communication of intelligence to the parent colony, and uniformity of action on the part of the swarm. Now, who appoints this committee, and in what way is their report received and unanimously adopted and acted upon?—*Iowa Homestead.*

HORTICULTURE AND APICULTURE.

[1414.] The true horticulturist, like the successful bee-keeper, is an enthusiast. I need not remind any one who plants trees and grows fruits of the genuine pleasure that thrills the soul when nature responds to his intelligence, thought, and careful direction? He lives in a world of his own. He needs no other intoxicant to complete his happiness. Horticulture is one of the fine arts; it requires the skill of a master. It is just as impossible for the thoughtless, brainless clod-hopper to reach the highest round in the ladder in propagating fruit, as it is for him to appreciate it after it is grown. But after all man's skill in planting, after ransacking the earth for improved varieties, after propagating, grafting and hybridizing, he must rely mainly upon Nature's methods of fructification. The favouring winds and industrious bees are needed to fertilise the bloom to insure a harvest of fruit. As a means of accomplishing this end, there is no question but that the bee is of great service to the grower of fruits; no other insect is multiplied in such vast numbers so early in the spring when their agency is so much needed to fertilise the orchards and small fruits.

If the winds were the only means of carrying the pollen from flower to flower, how often would perfect fertilisation fail from too much or too little wind during the brief opportunity when the bursting buds are sighing for the life-giving dust from the neighbouring flowers.

Not only is honey provided in the delicate chalices to entice them, but the pollen so essential to the plant (and just as essential to the bee in furnishing the proper food for its young), is placed in close proximity to the nectar, so that in getting either, the bee is unwittingly carrying the dust from flower to flower, or working out the wise plans of Providence as relates to plants, and catering to man's pleasurable tastes at the same time. The drop of honey is placed then in the flower not because it is needed to perfect the flower or fruit, but to tempt the bee to brush its hairy legs against anthers, and distribute the golden dust. So the bee introduces itself at once to the horticulturist as his friend. The latter ought to meet it half way and acknowledge its two-fold service. It does him a service while on its daily rounds in search of food for itself and young, and again by storing up for his benefit the liquid sweets which it does not need itself, and which ungathered vanish like the morning dew, like the manna which the Israelites ate of—the ungathered portions melted 'when the sun waxed hot.'

What, then, is there to hinder these two vocations from going hand in hand, since each is helpful to the other? They ought at least to be on friendly terms. Each furnishes inducements for the other to exist.

But, aside from these considerations of the healthful diversions and pleasing variety of mind, and returning again to the utilitarian side of the question, the horticulturist will find it profitable to pursue the study and practice of this delightful branch of entomology. The habits and instincts of this 'pattern of industry' are ever interesting, and the business quite as remunerative as raising tender fruits in an 'iron-clad climate.' This pursuit, once entered upon, possesses charms of its own. No other stimulus is needed to follow it than the fascination of its own creations.

A great deal has been said about bees injuring fruit—some fruit-growers having charged that they puncture the ripe grapes, suck the juice, and destroy the crop. But from the physical structure of the bee this is said to be impossible by scientific entomologists. It has no jaws like the hornet; it is made to suck, not to bite: and on close observation, and after repeated experiments, it has been found that where bees are discovered helping themselves to ripe fruit, that the skins had been ruptured by the weather or from over-ripeness, or that hornets or wasps or birds had first been the depredators. After the skin has been broken from any cause, if there is a scarcity of honey, the bees, always anxious to be doing something, will endeavour to get a share of the plunder. Therefore, as to bees injuring fruit, I, as their attorney, shall claim to the jury that the charge is not proven.

In dismissing this subject, which to the lover of fruits, flowers, and bees is always a source of infinite delight, I cannot refrain from quoting a few lines from 'The Planting of the Apple Tree,' by that venerable sylvan poet, our own Bryant, who saw so much of future hope and promise as he sifted the soft mould about its tiny rootlets:—

> 'What plant we in this apple tree?
> Sweets for a hundred flowery springs
> To load the May-winds' restless wings;
> When from the orchard row he pours
> Its fragrance at our open doors
> A world of blossom for the bee.'

—Eugene Secor, *Forest City, Iowa* (*extracted from the Address of the President of Michigan Bee-keepers' Convention*).—*American Bee Journal.*

PRIZES.

[1415.] I have been thinking that if some substantial prizes were offered at our shows it would give a fresh

and increasing impulse to bee-keeping. For instance, think of the thousands of people who keep dogs, fowls, pigeons, canaries, &c., mainly for competition and to win prizes at shows in different parts of England. Men compete for prizes at athletic sports who would not take any interest in them if it were not for the competition they caused. I believe we as bee-keepers would all be benefited if something were done in this direction. In this town (Ipswich) we are going to have next year the Agricultural Show, when thousands of people will visit it from all parts of the country, and if a good number of bee-keepers exhibited their honey they would have an excellent opportunity of selling a large quantity, increasing the demand for English honey, improving bee-keeping in our rural districts, and taking prizes worth having which would well repay their trouble. We are living in an age of keen competition, and if we wish to succeed we must keep up with the times, and not leave a stone unturned to make bee-keeping a paying industrial enterprise.

In conclusion, I propose that a subscription be started for obtaining money for the prizes, and I am willing to give a donation and join the subscription list if started. Hoping this may meet with my fellow-bee-keepers' approval.—J. CHURCHYARD, *33 Chevalier Street, Ipswich.*

WHAT DO BEES USE IN WINTER WHEN THE POLLEN COLLECTED BY THEM HAS BECOME EXHAUSTED?

BY PASTOR SCHÖNFELD OF TENTSCHEL.

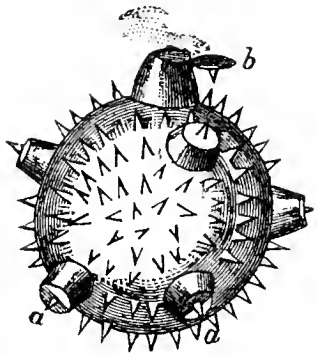
Any apiarist, with however slight a knowledge of bees, is aware that they require a certain quantity of nitrogenous food, not only for the purpose of supporting life, but also for the maintenance of the brood. The natural food of bees, of course, is honey and pollen. If, therefore, for some reason or other, there is an absence of pollen in the hive in winter, which unfortunately is but too often the case in districts without bee-pasture late in the summer, when there has been a continuance of breeding till late in the autumn which has exhausted all the pollen collected by the bees, or when unfavourable weather during the last few weeks in autumn rendered the storage of it impossible, the bees have entirely to content themselves with honey as food for themselves and their brood during the succeeding winter. But according to the valuable investigations of Erlenmeyer and Dr. von Planta (*Nordlinger Bienenzeitung*, 1879 p. 5), the average total quantity of nitrogen in ten different samples of honey was only 0·1762 parts in 100 parts of dried honey. It is quite clear that so exceedingly small a percentage of nitrogen is altogether insufficient to maintain a colony in a normally healthy state during the winter, and still more so to enable healthy brood to be reared from the middle of January till the month of April, during which time breeding not infrequently takes place. As although, old bees during the first three months of the winter when their vital energy is considerably reduced, are able to dispense with pollen, and from instinct, perhaps intentionally, discontinue its use even if present in large quantity, in order to make it possible to lower the vital process, so absolutely necessary in our climate, yet as soon as the impulse for breeding is aroused and the preparation of chyle demands the full use of their vital power, pollen becomes indispensable to them and the brood. This is proved by the eagerness and hurry of bees in search of pollen, as soon as their first excursions to cleanse themselves have taken place in spring, by the enormous consumption of pollen while breeding is on the increase, by the diminution or complete cessation of breeding if pollen-gathering is impeded by continuously unfavourable weather, by the remarkably favourable results obtained by Heath bee-keepers, who feed their colonies stimulatively on honey preserved in casks into which it is pressed, together with the combs, which honey, on account of its high percentage of pollen and nitrogen, ought not, as is usual, to be classed as a stimulant, but as nourishing food; and lastly, it is proved by the bees becoming ill and dying, if compelled for any length of time to rear brood or to construct combs in the absence of pollen. (Von Berlepsch, *Nördlinger Bienenzeitung*, 1854, p. 241.)

But how can these notorious facts be made to agree with the equally well-known fact that very many colonies without possessing a single cell of pollen are able to live through the whole winter, and to rear perfectly healthy brood for a period of from eight to ten weeks? Does not this forcibly suggest to us that inside the hive there must be another source from which bees are able to procure the indispensable nitrogen, though the quantity obtainable may be but small? For no physiologist who is acquainted with the nature and life of the bee will for a moment admit the common assertion which is repeated over and over again, that when bees are compelled to live upon honey exclusively the nitrogen stored up in their body is used as a substitute for weeks or even months in the absence of pollen, just as the bear is said to feed upon its own fat during its long sleep in winter. Chemical change takes place in the body of the bee so very rapidly and energetically, that without food in the shape of honey starvation would result within thirty-six hours: on the other hand, the consumption of the raw material—honey and pollen—in the preparation of chyle for the brood is so large, that when pollen is wanting, a supply of the requisite albuminous constituents of food from the body of the bee for weeks or months is a matter of impossibility. The quick and shortlived bee can only for a short time draw upon its own body for the failing nitrogen, inasmuch as chyle is not an extract from its blood but a product of its stomach.

Starting with the fact of bee-keepers frequently making the experience, that second swarms of young and strong bees with a young and vigorous queen and splendid new combs often survive the winter in a worse condition, and with greater loss in population, than colonies with old comb, even if possessing sufficient honey, stored in the proper place in the hive—a fact which is generally explained by saying that old combs are better for keeping bees warm: and having had my attention directed to the very large quantity of whole and undamaged pollen-grains, which during my experiments concerning the question of brood-cell cappings I discovered in the cell-walls and the membranes left behind by the nymphs, but principally in the margins of cells of old comb, and in equally large numbers in the excreta of the larvæ at the bottom of the cells, I arrived at the conclusion that in these pollen-grains, as in other nitrogenous matter mixed up with them, the bees have a sufficiently abundant source of this (to them) indispensable substance; and as in making brood-cell cappings they are obliged to gnaw down the cell-walls and to masticate the wax and work it up, and likewise, in cleansing the cells have to remove from the bottom of the cells the excreta of the hatched larvæ, they become aware of the presence of the pollen, which is thus rendered accessible to them.

And the percentage of nitrogenous matter which these excreta contain is very high, seeing that they are largely mixed with unbroken pollen-grains, as mentioned above. The exterior membrane of pollen, called the exine, is known to possess a great resisting force. Besides, the stomach of the bee, much less the stomach of the larvæ, is unable to make all pollen-grains discharge their contents of protoplasm. For the discharge of the protoplasm in the natural way takes place, in most cases, not by the exine simply bursting, but through special valves in the exine, which remain closed as long as the pollen is kept dry. In my last article I gave a sketch of an unbroken pollen-grain from a pumpkin blossom to which I have to direct attention once more. It shows the lids of the valves. When the pollen-grain is moistened, the proto-

plasm swells and raises the valves, as shown in the figure at *a* until at last the lids fly back, and the protoplasm discharges itself as seen at *b*. But this mechanism often



fails to act in the stomach of the bee, and the pollen then remains closed and is of no use to the bee. This is proved by the large number of whole pollen-grains frequently found in the rectum of bees.

After these observations there appeared to me some justification for my conjecture that bees, in case of need, seek to obtain the nitrogen they are in want of from old comb and the excreta of larvæ, the more so as it is well known that when pollen is wanting during the time bees are in full flight, they have recourse to various substitutes, such as dust from blighted barley, from clover seed at thrashing time, and charcoal, and rust from willow leaves, &c. &c. (Von Berlepsch, *Die Biene*, 1869, p. 135.) It therefore became necessary for me to ascertain by experiment, whether my conjecture was correct or untenable.

For this purpose I made two small trial colonies which I kept without food for two days, in order that any pollen the honey stomach and the chyle stomach might contain should become digested, and the husks be carried into the rectum. Thirty hours later trial colony A received a small comb quite recently constructed, with brood, from one to three days old, and two empty combs also recently made, with a supply of solution of sugar, all the three combs being without a trace of pollen. Colony B received two old black combs with solution of sugar, and in addition one new comb with brood, one to three days old, likewise without pollen. The colonies were then placed in a dark, dry cellar. If, at the end of four days no pollen was found in the rectum of the brood from colony A, while that of the brood from colony B contained pollen, this would prove conclusively that the bees in hive B had obtained nitrogenous food from the black combs. The experiment unfortunately gave no result, as at the end of four days it was found that both colonies had torn out and sucked all the brood. Nevertheless, this experiment strengthened my supposition that I was on the right track to discover the unknown source from which bees obtain nitrogen, having found out that the chyle stomach of the bees from colony A contained only perfectly pure and clear chyle, while among the contents of the chyle stomach of bees from hive B there were numerous pollen-grains, pollen-husks, and a great many small black bodies, which could only have been derived from the black combs. I therefore made preparations at once for a second experiment, determining to place the trial bees in the middle of the brood-nest of a colony that was at perfect liberty to fly out. I took a newly-made comb, perfectly free from pollen, and containing some brood one to three days old, adding the necessary food, consisting of a solution of sugar, and surrounded it on all sides with wirework, between which and the upper edges of the cells a space was left of half centimetre, so as to allow the bees to move freely on the comb, but in order to prevent their being fed through the wirework by the other bees in the hive I fixed a second cage of wirework over the first, leaving a space of one centimetre between them. A black comb, in the middle of which a piece of brood one to three days old had been inserted, was protected in the same way, and then the two combs were placed in the brood-nest of a strong colony after a sufficient number of workers from the first trial colony A, which had already been seven days without any supply of pollen, had been driven into the cages through an opening arranged for that purpose, so as to have the combs well covered with bees. In this way the brood was attended to, and the examination four days later showed the stomach and rectum of the brood in the black comb to be full of pollen-grains, pollen-husks, and those small black bodies mentioned above, while the same organs of the brood in the other comb contained only pure chyle.

This seems to prove that in the absence of collected pollen bees are able to find a substitute in the nitrogenous matter contained in old combs and the excreta of larvæ. I make use of the word 'seems,' because the trial bees in their prison, although in the middle of a brood-nest, were, nevertheless, somewhat in a state of distress. But needs must when the devil drives, and I, therefore, do not judge with certainty of the behaviour of colonies which enjoy perfect freedom by the conduct of bees in confinement. It is consequently necessary that a final experiment should be made. Which of my colleagues will assist me? Who will take the trouble, about the end of October, when all gathering has ceased, to establish a trial colony with combs as new and white as possible, but without pollen, and who will put up a similar colony with very old combs, likewise without pollen?

The honey for these colonies had best be given in drone-combs, which never contain any pollen, and the most suitable place in the hive for these small colonies would be the division for the storage of honey, provided with special entrances in order that the bees may enjoy the necessary warmth and commence breeding next spring before the opening of the honey season. The greater the number of trial colonies established the more reliable will be the result obtained.

Whoever is kind enough to set up trial colonies as described will oblige by sending me about the end of February or beginning of March a small piece of brood-comb ready to be sealed, without, in the first instance, mentioning whether it has been taken from a colony with new or old combs, in order that I may commence my examination unprejudiced by any preconceived opinion.

Should any Bee-keepers' Association be willing to take this matter in hand I should be pleased if they would communicate with me.—Translated from *Gravenhorst's Deutsche illustrierte Bienenzeitung, September*, 1887.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of persons interest will be answered in this column.

Rev. J. Davies.—*Deserted Skeps.*—In all likelihood both colonies became queenless, more especially the one in which you found two clusters of dead drones. On the last occasion, when you noticed these skeps with apparently strong colonies, judging by the number of bees round the entrances, did you observe any chips of wax on the alighting-board? From your description of the condition of the skeps, it seems improbable that they have been tenanted by the rightful owners for some time. If the capped brood found in one was alive, the desertion must have been recent. Bees finding themselves queenless in

the late autumn, will desert to another hive. Would it be inconvenient for you to transfer all you may have in skeps to bar-frame hives in the spring? The actual condition of a colony can be ascertained with so much greater ease.

W. A. T.—*Moving Bees to Heath Two Miles Distant.*—If there are no extensive woods between you and the heath your bees would most likely find their way to it. The heath is not so good a honey-plant as the heather so frequently mentioned in our pages. Unless your bees have really no forage within a mile or two of home at the time the heath is in bloom it would not be worth while to move them, considering the risks. If you would like to see a piece of real heather, send your name and address to the Editor.

C. A. J.—*Murmuring Noise in Hives.*—*Apis mellifica*, like the genus *Homo*, is at times compelled to indulge in exercise to keep warm. This explains the noise you refer to, which is by no means unknown.

Malta.—1. *Wax-moth in Frame-hive.*—From your description there is no doubt you have wax-moth. Keeping all frames well covered with bees is the best preventative and cure. Any combs not in use should be well fumigated with burning sulphur, and either kept in paper or hung in a cupboard where there are plenty of spiders, who will catch any moth that attempts to alight on the combs. A slight brush will remove the spiders' webs before returning the frames to the hives. Put new quilts on; burn the old ones. Carefully clean out the hives at the same time. 2. *Crooked Combs.*—$1\frac{9}{16}$ in. is the extreme distance that should intervene between the centre frame and that next to it. If you cannot put a starter of either foundation or comb, melt some wax, and run a streak of it along the centre of each top-bar and side bars. Take care your hives stand level. 3. *Hornets, to Destroy.*—You will find (p. 9) an interesting communication from Palestine, in which reference is made to the native method of dealing with these pests. 4. *Bee-keeping in Malta.*—Can you favour us with any particulars concerning the present state of bee-keeping in Malta? if so, it may afford pleasure to many of our readers.

J. Fitzgibbons.—*Moving Bees.*—You will doubtless find sufficient information on pages 39, 149, 210, 409, and 478 of the volume for 1887.

Doubtful.—*Combs from foul-brood Hives mixed with others.*—Spray all your combs with a solution composed of salicylic acid one ounce, borax one ounce, water four pints. As an extra precaution, repeat the operation three or four times between now and the time you will be returning them to the hives in spring. If you can identify those from the diseased hive, give them extra sprayings.

C. D.—*Unsealed Brood.*—It is to be hoped that no serious mischief will be the result of the presence of the unsealed brood. The bees cannot be disturbed at present. As a counter-attraction candy can be given to them below the quilt.

E. W. Shotter.—*Bibliography of Bee-Keeping.*—The enumeration of the books on bee-keeping that would be 'worth securing' would fill a large portion of our space; the catalogue of the library of the B.B.K.A. (a copy of which we have forwarded to you) would render you great assistance in this, and would furnish you with the titles of the best and most precious works that have been written in the English language on bees and bee-keeping. Thomas Wildman's *Treatise on the Management of Bees* (1778) would be worth about 8*s.* 6*d.* This is the third edition of Wildman's *Treatise*: the two former were published in 1768 and 1770. The book is not often met with.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Appleton, H. M., 256a Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
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British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
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Edey & Son, St. Neots.
Howard, J. H., Holme, Peterborough.
Hutchinos, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
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Webster, W. B., Wokingham.
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Wren & Son, 139 High Street, Lowestoft.

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British Honey Co., Limited, 17 King William St., Strand.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
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Meadows, W. P., Syston, Leicester.
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Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.

HONEY GLASS MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Blow, T. B., Welwyn, Herts.
Pearson, F., Stockton Heath, Warrington.

NOTICE.

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BAKER, W. B., Muskham, Newark.
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WITHINSHAW, A., Newcastle, Staffordshire.
WOODLEY, A. D., 26 Donnington Road, Reading.
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Editorial, Notices, &c.

BRITISH BEE-KEEPERS' ASSOCIATION.

ELECTION OF THE COMMITTEE FOR 1888.

The following members have been nominated in accordance with the amended form of rules as passed at the last Annual General Meeting, each member being nominated by two members of the Association:—

Rev. E. Bartrum, D.D., Wakes Colne Rectory, Halstead, Essex.
E. H. Bellairs, Esq., Christchurch, Hants, Hon. Secretary of the Hants Association.
Hon. and Rev. H. Bligh, Hampton Hill, Middlesex.
Captain W. Bush, R.N., Southleigh, Stevenage.
Captain C. D. Campbell, Box Grove, Guildford.
Rev. E. Clay, Great Kimble, Tring.
Thos. W. Cowan, Esq., Comptons Lea, Horsham.
J. Eastty, Esq., 86 Grange Road, Bermondsey.
Rev. R. Errington, Clewer Rectory, Windsor, Hon. Secretary of the Berkshire Association.
J. M. Hooker, Esq., 76 Tyrwhitt Road, St. John's.
H. Jonas, Esq., 64 Redcliffe Gardens, S.W.
Rev. F. G. Jenyns, Knebworth, Stevenage.
W. Lees McClure, Esq., The Lathoms, Prescot, Lancashire, Hon. Secretary of the Lancashire and Cheshire Association.
Rev. G. V. Oddie, Aston, Stevenage.
Rev. Geo. Raynor, Hazeleigh Rectory, Maldon.
Rev. F. S. Sclater, Dropmore Vicarage, Maidenhead.
Rev. F. T. Scott, Hartlipp Vicarage, Sittingbourne.
Rev. J. L. Seager, Stevenage.
Dr. G. Walker, Lingfield Road, Wimbledon.

Four of the above named are unable to serve on the Committee, the remaining fifteen therefore stand elected for the ensuing year.

SUBSCRIPTIONS, &c.

Subscriptions for the current year become due on January 1st. It is hoped that members will forward the same at the earliest possible date, and, further, use their best endeavours to induce their friends to become Members of the Association. Post Office Orders to be made payable at the Kings Langley Post Office. Cheques to be crossed 'Bucks and Oxon Bank.'

QUARTERLY MEETING AND CONVERSAZIONE.

The next Quarterly Conversazione will be held at 105 Jermyn Street, on Wednesday, January 18th, at six o'clock. Members wishing to introduce subjects for discussion, or to submit new, improved, or interesting appliances, are requested to communicate with the Secretary not later than Saturday, the 14th inst. Mr. R. A. H. Grimshaw will read a paper on 'Specialization.' County Representatives will meet at 149 Regent Street, at four o'clock. The Quarterly Conference of the County Representatives with the Committee of the B. B. K. A., will take place at 105 Jermyn Street, at five o'clock.

GENERAL MEETING.

The Annual General Meeting of the Members will be held at 105 Jermyn Street, at 3.30 p.m., on Wednesday, February 8th, the Baroness Burdett-Coutts, President of the Association, in the chair. Notices of motions for this Meeting must reach the Secretary not later than Saturday, January 28th.—JOHN HUCKLE, *Secretary*, *Kings Langley, Jan. 7th*, 1888.

THE WINTERING PROBLEM.

In the December number of our contemporary, the *Record*, we notice the details of an interesting experiment in wintering, viz., burying a frame-hive, containing a colony of bees with a proper supply of food, in a shepherd's hut, which is dug out of a hill-side, the door of the hut being blocked up with sods of turf to a considerable thickness. Prior to depositing the stock, it was weighed, and the condition of the bees as to strength and stores carefully noted. It is intended to unearth them at the expiration of five months from the date of their being placed in the hut, when the hive will again be weighed, and full notes taken of the state in which it may be found. We trust success may attend the experiment.

The theory that if bees can be maintained at an equable but low temperature of about 40° to 45°, it will tend to conserve the life of the workers during the winter months, and so enable the stock to commence spring strong in numbers, is, no doubt, worth consideration, *i.e.*, that an excitement during the winter, even although it be a cleansing flight, is the occasion of a depletion in numbers. To decide whether it would be a commercial success to incur the outlay necessary to provide a suitable cellar, and also the annual expense of moving the stocks into and from the same, is a question that nothing short of a experiment on a large scale, extending over several years, can solve.

Our Canadian friends are, by force of circumstances, obliged to carry out elaborate arrangements in order to prevent their bees being frozen to death. But they certainly seem to have the advantage of us in the numerical strength of their

colonies in the early spring. The questions that arise in our mind at this point is, Can this greater numerical strength be the result of the bees being so long confined to their hives, and general inaction consequent on the temperature being low and varying so little? Also, is such a colony (numerically strong through the prolonged survival of the old bees) not more liable to a sharp attack of 'spring dwindling,' through these old bees all dying off about the same time?

In such a variable climate as ours, and one alternating with such rapidity, it is impossible, while bees continue to be left on their summer stands, to avoid a considerable loss of the old bees during the sudden changes of our English winter, which not infrequently in the neighbourhood of London has a temperature varying from 20° to 50° Fahr. within sixty or seventy hours. Such variations effectually prevent our bees, as at present wintered, remaining dormant. Raising the body-box containing the brood-nest some distance up from the floor-board by means of an eke is practised by some eminent apiarists, and considerable success is claimed for this system. In some cases a doubling-box, of the usual depth of a standard frame, is recommended. Such an arrangement will, of course, effectually prevent the dead bees blocking up the passage-way under the combs. In the autumn of 1886 we inspected a stock that had been sadly neglected. As a swarm of that year they had been placed in the box super without foundation, but with empty frames in the hive proper. The bees (nearly pure Italians) built their combs in the super, and continued them about five inches down into the hive, as no frames had been placed under the super except at the ends. The colony never became strong, and had not more than six pounds of stores at the date of our examination. The owner gave no additional supply of food, although strongly advised so to do. No extra packing was given, yet in the spring there certainly was not a wineglassful of dead bees on the floor-board. The colony prospered in the early spring, and would, doubtless, have given a good account of themselves if the season had been a normal one. At the end of March, 1887, they still had quite two pounds of stores, a fair patch of brood, and a general healthy appearance.

Would this neglected colony have wintered as well if they had been in the hive body, instead of the super, which, by the way, had no upward ventilation, as it had a wooden top tightly screwed down? We are inclined to think not, because this hive was the only one in the district referred to that did not lose a large number of bees during the time the snow lay on the ground. They took no flights during that period. Is this to be accounted for by the fact that the very free circulation of air through the body-box and around the outside of the super really induced an almost complete hibernation, with a consequent saving of bee life?

Mr. Simmins, in his *Modern Bee Farm*, expresses his preference for all floor-boards to have a two-inch auger hole through the centre, as providing free ventilation and a ready means for the removal of dead bees, and that hives of twelve-frame capacity have an empty hive-box under the one containing the bees and their stores. In long hives, he further recommends making the swarm comfortable, with quilts and cork cushion, on a few frames at the back of the hive, having no division-board in front, but merely empty frames, covered by a thin, porous quilt. He states that a colony so wintered will be much stronger in spring than one in a single-storey hive, and confined to a few frames by division-boards, especially by the front one. Is this departure to revolutionise our system of wintering? We shall be glad to receive reports from any of our readers who may give it a trial either in part or in its entirety.

The question is not, With how little care can our bees survive the winter? but, Would a system which provides for a free circulation of air within the body of the hive conduce to the greater strength of our colonies in spring, and a consequent anticipation of the date when such colonies would be in readiness for the honey-flow?

Foreign.

UNITED STATES.

The Annual Convention of the North American Bee-keepers' Society took place at Chicago on the 16th, 17th, and 18th November. Dr. C. C. Miller, the President, took the chair, and there were present a great number of the leading bee-keepers. The *American Bee Journal* gives a very full account of the papers read and the discussions, and from it we are able to give our readers a summary of those parts which we consider would prove interesting to them.

Mr. J. A. Green read a paper on 'The Production of Comb and Extracted Honey in the same Apiary.' He said that 'in bee-keeping, as in other occupations, the greatest average success will be gained by making a specialty of it, even though an occasional season, such as that just past, may bear hard on some. Yet this principle may be carried too far. We have already bee-keeping as a specialty, divided into the sub-specialties of honey-production and the rearing of queens and bees for sale, while some insist that honey production should be divided, and a specialty made of either comb or extracted honey.' He thinks, although in some places comb-honey cannot be profitably produced, and in others it will not pay to work for extracted, in most cases a judicious combination of the two will give the best results.

In working if you have some colonies that do not produce nice-looking comb-honey, pinch off the heads of the queens as soon as convenient, but in the meantime take their honey with the extractor. Poor extracted honey can be sold for manufacturing purposes, but poor comb-honey is hard to sell anywhere. If honey comes in faster than bees can build comb for it, a few empty combs distributed among the best colonies will pay an enormous profit.

In working for extracted honey a large number of extracted combs are wanted, at least one set for each colony. When the honey-flow begins give each colony a set of combs. Bees will begin to work sooner in empty combs than in empty sections. After the bees are well at work above, remove the extracting combs from as many colonies as you want to work for comb-honey, and give them sections. Pile up the supers of partly filled combs over other colonies, and this will ripen the honey which will be much finer than that usually produced.

Whether for economy or excellence of quality there is no way of producing extracted honey equal to that of giving the bees plenty of room in which to store it, and then plenty of time to ripen it.

Towards the close of the honey-flow, instead of putting on more sections, which are not likely to be finished, take the sections from a part of the colonies and put them on the others to complete, and give those from which they were taken empty combs instead. The advantages of this system are: First, getting the bees started without delay; second, your comb-honey is nearly all No. 1, and the extracted honey is the finest that can be produced; last, and not least, you are rid of nearly all the trouble and expense of unfinished sections in the fall, and having few now you have few in the spring, and this is the reason why the comb-honey is finer. Honey stored in combs built the year before is never equal in quality or appearance to honey in newly-built combs.

On being asked by F. Wilcox how much more extracted than comb-honey was produced, Mr. Green said if first-class honey about twice as much, but if such as is usually produced three times as much. In answer to Dr. Miller, he said that he secured a poorer class of honey by using drawn combs in the sections. Honey is more inclined to leak when stored in old combs.

Mr. Betsinger said that it was more inclined to granulate, because any comb or vessel that has once contained granulated honey will cause the granulation of any honey placed therein.

President Miller introduced the subject of 'Legislation for Bee-keepers.' He said as a man could not farm without land he could not keep bees without pasture, and believed that legislation securing to each bee-keeper a certain amount of territory was desirable, although it might not be feasible.

Dr. Mason concurred, and F. Wilcox suggested that bees should be exempt from taxation, and that licenses should be granted giving the right to a certain territory.

Mr. H. R. Boardman considered small bee-keepers needed protection more than large ones.

Professor Cook thought if there were a large number of specialists all over the country such legislation might be advisable; but these were few and scattered, and he thought that reasoning would be the better plan with any one coming to set up bee-keeping close to him, and pointing out that coming so near meant disaster to both.

It was voted that in the present stage of bee-culture legislation was neither desirable nor feasible.

Mr. Thomas G. Newman read the next paper on 'Objects and Methods of a thorough Organization of the Bee-keepers of North America.' He said he desired to inspire them to undertake a 'progressive step' in the direction of organization. The pursuit of modern bee-keeping is in its infancy, yet at the present day its devotees in North America number 300,000 persons, and its annual product of honey amounted to 100,000,000 of pounds, and its value about fifteen million dollars.

Some of the principal wants were: A systematic encouragement of bee and honey shows at fairs, providing bee-tents at bee exhibitions, inaugurating a system of *education* of bee-keepers, and by certificate or otherwise guaranteeing to those who wish to hire assistants that they possess a practical knowledge of the business for which they are wanted.

The constitution of the Society should be amended to make it a representative Society; this would not be difficult to carry into effect, and he proposed a number of rules and bye-laws, thirteen in number. These are in the main taken from the Rules and Regulations of our British Bee-keepers' Association, the working of which we explained to Mr. Newman when at Chicago, and full details of which we wrote out at his request. The proposed constitution would alter the name of the Society to 'The Inter-National American Bee-keepers' Association,' and is to include all of the United States and Canada. Any state, district, territory, or province, can become affiliated on payment of five dollars a-year; the presidents of these to be *ex-officio* vice-presidents of the Inter-National. Experts are to be examined by an expert committee and certificates awarded. Two medals are to be given to each affiliated Society as prizes for honey shown by its members, and they shall be entitled to the privileges of the Honey Company, which it is proposed to form in connexion with the Society. Delegates are to be appointed to attend the annual meeting of the Society.

The proposed organization differs from ours in having a Honey Company in connexion with it, otherwise it is very similar; and we are glad to find that our Society has been taken as a model, and hope that the Inter-National may be as successful and as useful as ours has been. A change is not made in a day, and it will, of course, take some time before it can equal ours in efficiency, but we welcome the step as a progressive movement.

On the motion of Dr. Mason the consideration of the subject was put into the hands of a committee consisting of Professor A. J. Cook, W. Z. Hutchinson, and A. I. Root.

Before the close of the Convention the Committee reported that they had given the scheme all the thought and consideration it was possible in so short a time, and while thanking Mr. Newman for the great labour and thought bestowed on the subject, in view of the somewhat intricate and involved plan proposed, they recommended that the consideration of the matter be postponed for one year, at the end of which they would be better able to present a report commensurate with so important a subject.

The next subject was introduced by Mr. A. I. Root, on 'Foul Brood, how shall we treat it?' He said as soon as foul brood appeared in his apiary he began burning all the colonies affected. After burning forty colonies he found that in nearly every case the colonies adjoining the stand of the destroyed colony became affected, so he began to look out for another cure—spraying with phenol after tearing off the cappings with a wire-hair brush in such a manner as not to injure the healthy brood. This treatment does not always cure the disease, but it prevents its spreading to other colonies. With a small apiary he would burn up the 'whole business' if he found it infested with foul brood.

N. N. Betsinger said there are certain conditions that will bring about foul brood. He can produce it in ten days and can cure it in the same length of time with salt. Mix it with sawdust, put it into a keg, add water and keep it in the apiary where the bees have access to it.

Dr. Mason said he had known many who had tried salt and failed.

Professor Cook said odour was not a sure test, but the elasticity or ropy mass was.

B. T. Davenport had had trouble from 'dry' foul brood. The larva will break in two when attempt is made to remove it, but there is no ropiness or elasticity. The trouble is greater with dark than with Italian bees. He has cured it by change of queens.

The next paper was by Mr. C. P. Dadant, on 'Comb Foundation, its Manufacture and Use.' To make good foundation pure wax must be produced. Compounds of wax and paraffine or ceresine have been tried and will not do. They melt at a lower temperature than wax and endanger the safety of the colony. Paraffine and ceresine are detected by their lighter specific gravity, and tallow, which is a frequent adulterant, is noticed by the greasy and dull appearance of the cakes. Such wax should be rejected. After selecting the wax it is

melted and kept hot for twenty-four hours or more to allow impurities to settle. The sheets are made by dipping damp boards, and are thick enough to stretch in the rolls when moulded. In this wax all the inequalities on the surface are eliminated out, and from the pressure all moisture is driven off. In this branch of industry, as in all others, practice is required to acquire skill and speed in manipulation.

J. A. Green used 1500 sections one year, filled some with old and others with new foundation. Those with the new foundation were finished first, and those with old foundation completed last.

In reply to a question by Mr. Root, R. R. Murphy stated he had tried starters only, and found sections furnished with them were last finished.

F. Wilcox could not understand how Mr. Doolittle can secure and use natural comb, as he advocates.

R. R. Murphy puts on an upper storey in the fall and allows the bees to build combs in the frames, then extracts the honey and uses the comb next year.

J. Heddon prefers foundation to drawn combs, as it is quicker finished and looks better.

A. I. Root said that in using combs the cells are deep, and the honey does not ripen so quickly as when the cells are filled as they are drawn.

W. Z. Hutchinson preferred combs as it induced the bees to store the honey above instead of in the brood-nests. With him they commence to work in the supers when combs are used, and finish the honey sooner.

An essay on 'Production of Extracted Honey for Table Use' was read by T. F. Bingham, in which he stated that honey, like other non-crystallised saccharine substances, had a tendency to absorb water and undergo fermentation. If the honey was thick its changes are slower, but if thin they are more rapid. The honey should be left a long time in the hive of a populous colony before extracting, and then put up in neat two-pound bottles. If extracted late in the season it should be kept in a clean pine-barrel, bunged tightly if stored in a cool place. When taking out the honey he removes one or two inches of the surface honey, so as to avoid mixing that which has been in contact with the air with that which has not. The surface may be soft and foamy; this could be used for making into vinegar, the remainder melted in a water-bath and put into glass jars in a cool place. It will remain clear a long time, and will be as fine as if just taken from the combs. If only such honey were offered to the public, the market would not be *overstocked* and the *prices* would be satisfactory.

In the discussion most of the speakers advocated tin for storing instead of wood.

'At this time Professor A. J. Cook, of Agricultural College, Michigan, took occasion to speak of the recent enjoyable visit to America of Mr. Thomas W. Cowan, the distinguished editor of the *British Bee Journal*, who had called on so many prominent apiarists of the New World. The Professor said that it had never been his pleasure to meet with one so familiar with everything connected with bee-keeping, and with every person of any reputation as a bee-keeper. That, in the future, this visit of Mr. Cowan's would often be referred to, by those who were so fortunate as to meet him, as being one of the brightest events occurring in the history of progressive American apiculture. In view of the many resulting benefits, and the pleasant and profitable recollections following such a visit, the Professor moved that the thanks of the Society be tendered to Mr. Cowan for his visit, and that he be elected an honorary member of the "North American Bee-keepers' Society." The motion was seconded and carried unanimously.'

Immediately after this Professor Cook spoke about the Rev. L. L. Langstroth, and said that the Society could not do itself more honour, and express its appreciation of his efforts, than to forward a goodly purse to Mr. Langstroth, who, in his long-continued sickness, would receive it with much grateful appreciation. It was resolved to make a collection and add it to the amount remaining in the treasury, and after paying all the legitimate expenses of the Convention, to send the whole of the balance to Mr. Langstroth.

(*To be continued.*)

CANADA.

I have just returned from the North American Bee-keepers' Association which met at Chicago, November 16, 17, and 18. Canada had but one representative. The season has been a severe one for bee-keepers throughout America, reports from about forty bee-keepers show the following results:—Number of colonies in spring (1887), 3761; number of colonies in fall (1887), 4342; number of lbs. comb honey secured, 33,290; number of lbs. extracted secured, 28,100; number of lbs. beeswax secured, 1136; number of lbs. fed back, 10,260. This shows an average yield of about 6 lbs. of comb honey and 6 lbs. of extracted honey per colony after deducting the number of pounds fed back. Amongst the reports there is only one from Canada, my own, which is:—Spring count, 39; fall, 48; lbs. of extracted honey secured, 3100; lbs. fed back, 200; lbs. of wax secured, none given, as it has not yet been rendered.

From all reports it is however safe to say we have been more fortunate than the bee-keepers of the United States, and throughout the entire American continent the markets will be entirely free of honey long before next year's honey crop will be harvested in even the more southern parts. The prices secured at present are very much above what they have been for some years, especially so in the United States, and for comb honey we are looking hopefully forward to keeping the prices up for the future.

Mr. Cowan's visit to us has been during an exceptionally poor honey season, and we have regretted our inability to show him what honey flows we have, and what honey exhibits we can make. His visit to Canada has been, to those with whom he has come in contact, one of the bright spots of a season which to so many, especially those who depend upon the profits of their apiary, has been a rather depressing one. We all feel that we owe Mr. Cowan a debt of gratitude for his visit. His unselfishness in caring for and carrying about a heavy microscope, and labouring for hours to show to us new wonders in regard to the structure of the honey bee, and creating in us a higher interest in apiculture, cannot soon be forgotten. The information which he possesses as to bee-keeping in all parts of the world and past ages has also been of interest to us; and, as will be seen by past numbers of the *British Bee Journal*, we have attempted in some small measure to show Mr. Cowan our hearty appreciation of his kindly visit amongst us. The North American Bee-keepers' Association, by a unanimous vote, passed a resolution thanking Mr. Cowan for his visit, and the great trouble and expense he had gone to in visiting us, regretting his inability to remain and be with them at their meeting.

One point which must have struck Mr. Cowan very forcibly, and does us in a measure, is the fact that we keep our bees, first and foremost, for the profits which we may derive from them financially; all else is secondary. We, in a measure, appreciate the study of the bee, but not as leading British bee-keepers do. From what I can learn their motives are different to ours, and few of us can devote our labours to apiculture, its spread and study, aside from financial return. This must be the case in every new country, and our struggle for money, or, in other words, the means of subsistence, debars us often from other pleasures and studies which would be quite as much in accordance with our inclinations. The structure of the bee as revealed by the microscope is

therefore something new to most of us, and this more intimate study of the bee, for which such are indebted to Mr. Cowan, will awaken interest in a new direction, and give us ever after keener enjoyment from the source from which we must derive our means of subsistence.

FRANCE.

The annual Bee and Honey Fair, which is held at Chartres on St. Andrew's day, has, this year, been a complete success, and several transactions of considerable importance are known to have taken place. Bee-keepers came in from the surrounding districts in large numbers, and, after having attended the annual general meeting of the Bee Association, repaired to the 'Café Bordier,' Place des Halles, where, for the convenience of intending buyers, the names of those who had either honey, bees, or implements to sell, were exhibited in a large frame; and it was noticed that many were those who made notes of what there was to be sold and of seller's name and address.

Bee-keepers are again reminded that applications for exhibiting in the great forthcoming exhibition of 1889, must be sent in before the 1st of February next, addressed to the 'Ministère du Commerce,' or 'Avenue de La Bourdonnais, au Champ de Mars, Paris.' In again repeating this information, the *Apiculteur* of that city suggests that, as far as possible, Bee Associations should not exhibit individually, but rather collectively.

ASSOCIATIONS.

GLASGOW INTERNATIONAL EXHIBITION.

We would desire to direct the attention of bee-keepers in England and Ireland to a letter from Mr. E. M'Nally, who, with his brother, John, has taken measures for the proper representation of the honey industry at the Glasgow International Exhibition, which will be held during the present year. He is anxious to get the names of manufacturers who use honey in their goods, and any information which will assist him in making the special classes interesting and instructive. Mr. E. M'Nally's address is 'Main Street, Rutherglen.'

IRISH BEE-KEEPERS' ASSOCIATION.

The Committee met on 3rd inst. Present—Mr. Gillies in the chair, Rev. P. Kavanagh, Messrs. Sproule and Stanford, and the Hon. Secretary. The drawing up of the annual report for 1887 was referred to a sub-committee, and arrangements were made for having it printed. Additional steps were taken with respect to the Association's standard hive, in order to ensure its being sent out perfectly complete.

Lecture on Bee-keeping.—Mr. R. A. H. Grimshaw, of Horsforth, near Leeds, gave a very interesting lecture on 'The Wonders of Bee Life,' in the schools of St. John the Evangelist, Walton-on-the-Hill, near Liverpool, to a large and appreciative audience on Tuesday evening 3rd inst. The chair was taken by Mr. E. Bird, Esq., J.P. The lecturer traced, in a most amusing and instructive manner, the various stages of growth, with the anatomy, habits, and customs, and use of these wonderful creatures and held his audience from first to last thoroughly interested. It was particularly noticed that the younger members of the audience were kept amused and instructed from first to last, the lecture lasting one hour and twenty minutes. After several interesting questions were answered by the lecturer, which were put by two bee-keepers, Mr. E. Fowler and Mr. J. A. Bally, and some clever diagrams explained, a hearty vote of thanks to the lecturer was proposed by Mr. J. A. Bally and seconded by Rev. F. B. Plummer, B.A., and suitably responded to by the lecturer.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts* (*see 2nd page of Advertisements*).

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

OUR HONEY IMPORTS.

The value of honey imported into the United Kingdom during the month of December, 1887, amounted to 481*l.* [From a Return furnished by the Statistical Department Her Majesty's Customs to E. H. Bellairs, Wingfield House, Christchurch.]

HIVES AND THEIR MANAGEMENT FOR COTTAGERS.

[1476.] The first question a cottager must solve is, 'What hive shall I *use?*' and we who endeavour to carry out the primary object of the existence of the British and County Associations, viz., the bettering of the condition of the cottager by urging him to adopt a more humane and more profitable system of bee-keeping, should, if we intend to assist him, have put to ourselves and solved this question, 'What hive shall I *recommend?*'

It has frequently been stated that almost anything will do to put bees into. That is quite true; bees may be kept in almost anything in which combs may be built—straw-skep, box or bar-frame hive. I have even seen stocks in old casks, wooden and zinc pails, and have taken from them for the owners a nice lot of honey. But although almost anything may be used and a nice surplus obtained, both the pleasure and the profit are much increased if the bees are kept in suitable hives, well and accurately made, and whether straw skep, box or bar-frame hive, well painted. The best and most economical materials for hive construction are certainly straw and wood. It would, I think, be a pity to banish the straw skep from modern apiaries, for it has a rustic appearance which is greatly valued by many old and some advanced bee-keepers. Personally, I should not like to see my apiary without a few stocks in straw skeps, because I like to see that most pleasant (sometimes most annoying) of all sights to a bee-keeper—bees swarming. Hence nothing would induce me to entirely prevent natural swarming from skeps.

The object of this article being to assist the cottager I shall be glad, with the Editor's permission, to more fully explain at a future time any part I may not make sufficiently clear.

In the first place, I must recommend the beginner straw skeps worked on the system explained below, or if it is his intention to become possessed of bar-frame hives I should say commence with the 'Champion Cottager.' This is a hive which I have designed with a view to its being used on the fixed-comb principle, as when skeps are used, and for the production of sections or run honey. When the fixed-comb system has been given up this hive will not have to be discarded as useless, but may then be used permanently as a section-crate.

Somersham Skep System.

The Hives.—Two kinds of hives are used, and these I term *stock hive* and *super*. Both should be closely and neatly made so as to fit accurately either above or below

each other; and they are exactly alike in every respect except depth, the stock hive being ten inches and the super six inches without the crown-boards. The outside measurement is exactly fifteen inches across, while the crown-board is sixteen inches across, half an inch thus projecting all round. The crown-board is made of two pieces of light wood about half an inch thick, securely fastened across the grain to prevent warping, the upper half being bevelled half an inch, so that the rain running down the side of a super will fall on the bevel of the lower hive and drop from the projecting half inch of the lower half of the crown-board. The floor-board is similar to the crown-board, except that a piece about six inches wide and three inches deep is cut out of the lower half to give the bees access to the hive through a hole 1½ inches wide by six inches long, cut in the upper half about three inches from the edge. A piece of wood projecting about four inches is then nailed under to act as an alighting-board, and form the floor of the passage into the hive. The object of this arrangement is to allow the bottom edge of the skep to remain perfectly level all round. This is not the case when the entrance is cut out of the floor-board, as that part of the skep immediately over the entrance is sure to fall by pressure above and will then fit no other part of the floor-board. The hole in the crown-boards of this kind of hive now in use in this district is two inches wide and eight inches long. This hole is apt to give a little trouble, though the immense advantage it gives over a small circular hole should be more than compensation for it. I now, therefore, recommend what I have found to give little or no trouble, viz., six holes eight inches long, ⅜ inch wide, ¾ inch apart and running parallel in the centre of the crown-board.

Management.—For each swarm there should be provided one stock hive and at least two supers, a floor-board and cover—an earthen pan if not too heavy. First give the outside of the hives at least two coats of light-coloured paint; if white is used the combs will be less likely to give way when the hive is exposed to the full rays of the sun. In very hot weather it is advisable to shade the hives a little. The bottom edge of the skeps and inside for about an inch from the bottom should be painted. The edges and about two inches of the floor and crown-boards should also be painted, so that the rain may not draw under. This would happen, and the edge of the skeps would soon rot if it and that part of the crown-board and floor-board where it rests were not painted. Having got the hives well painted and thoroughly dry, a swarm headed with a young queen should be obtained. It should weigh about four pounds.

Although the hive is ready we have not considered the site. An open space facing the south should be chosen when practicable, and with the path running behind the hives. Now clear away (and keep away) all weeds and make the ground firm. Four or eight bricks will make a sufficiently good stand, but the one I should prefer, where sleepers can be got, would be two laid side by side with the soil made slanting up to the top edge of the front sleeper, so that heavily-laden bees falling in front of the hive would easily get into it. The stand should be set as level as possible and then the floor-board should be placed on the spot the stock will occupy. This must be made perfectly level both ways by means of a spirit-level, which may be obtained for a few pence, and should always find a place in every apiary. This done, raise the back of the floor-board half an inch, because the combs should be built across the long holes in the crown-board, thus allowing the bees access to the supers from between all but the outer combs.

Having stopped the holes in the crown-board with a piece of cloth the swarm may be put in (hived in if got from a neighbour) and the hive then placed mouth downwards in front of the stand, not on it. Put a stone under the edge of the skep, and so let it remain until the bees have clustered in it. Then lift the hive carefully so as not to disturb the cluster and place it with the holes in the crown-board pointing east and west. As the entrance which points to the south is half an inch lower than the back the combs will be built from front to back across the holes. The swarm need not now be touched again for a week or ten days, unless the weather should be unfavourable for honey-gathering, in which case it should be fed with dry sugar.

If the weather be fine for a week or ten days a good swarm will have built combs nearly half way down to the floor-board, and unless super room is given every comb will be clogged with honey almost as fast as the comb is built, with the result that the hive, if left alone till the end of the season, would contain a lot of honey and a small quantity of bees. To super, place on the stock-hive, after carefully removing the cloth in the holes, so that the tender combs are not broken, a six-inch super with the holes in the crown-board pointing east and west. The super must be made secure so that there is no escape of heat. These operations are best done in the evening, the bees being kept down by a puff of smoke, or by smearing the edges of the holes with a feather which has been dipped in carbolic acid. If the swarm be a good one, the season early, and the district a good one for bee-pasturage, the bees will quickly take to the super, and when it is about three-parts filled it should be raised and another placed between it and the stock-hive. Both these supers will most probably be filled with delicious honey, while the combs below will be one mass of brood. If the bee-keeper prefer to have no bother with feeding he might be content with one super, when the stock-hive would as regards bees and honey by the end of the season be in a condition to winter successfully. When, however, it is found that after taking off the supers there is not sufficient food in the stock-hive to last the winter, syrup should be given as described in this *Journal* and the various bee-books.

The swarm will be termed a stock the following spring, and the treatment it will require will be similar to that recommended for the swarm. But as our object in the spring will be to prevent swarming, the super should be placed on the stock-hive early, that is, when the hive is well filled with bees and when honey-gathering in quantity has commenced. But it must be borne in mind that the super must not be allowed to get more than three-parts full before it is raised and another is placed between it and the stock-hive. The upper super will be first completed and may then be removed, and the remaining one treated as was the super, first placed on the stock-hive. Thus treated the stock will most probably give a large surplus in the supers, and swarming will be prevented. If there should be a fear when the supers are on that a swarm will issue raise the stock-hive and supers bodily and place under all on the floor-board an empty super. This will be used as a brood-chamber, and at the end of the season the combs should be cut out and melted in order that the super may be ready for use the following season.—C. N. White.

(To be continued.)

GLASGOW INTERNATIONAL EXHIBITION, 1888.

[1417.] As the season of 1886 proved to be a most interesting one in connexion with the honey exhibition in England, so the present year (1888) promises to be an eventful one in the history of Scotch bee-keeping. A year ago when the proposal to hold a Grand International Exhibition in Glasgow was introduced, I put myself in communication with the executive, and urged the importance of having our national industry duly represented. This suggestion was generously agreed to, and the name of

Mr. R. J. Bennett, the energetic secretary of our Caledonian Apiarian Society, was added to the list of directors.

At the annual meeting of this Association the whole subject was fully considered, but it was felt that the great expense necessary, and at the same time the fact, that no awards were to be offered, would debar many from coming forward during the full period of six months which the exhibition is expected to be open. Mr. Bennett had, however, arranged to get up a two-weeks exhibition during the month of July, to be held about the time when the annual show of the Caledonian is held which happens this year to be also in Glasgow.

This, however, still left the three sections granted us, viz., honey, honey goods, and apiarian appliances, unrepresented during the remainder of the exhibition. At this stage I consulted with my brother, Mr. John D. McNally, Springburn, who, like myself, lives convenient to Glasgow, and we finally agreed to apply for fifty square feet of space for two sections, viz., honey and honey goods, with the intention of getting up one or two cases, which we estimate will cost over 30*l.* each, exclusive of exhibits.

We have now secured the necessary space for one case, and the other is under consideration. It is expected that the Exhibition will be opened in May by H.R.H. the Prince of Wales, and already we have secured samples of honey from England, Ireland, Scotland, &c., and are still open to purchase special samples so as to fully illustrate the varieties and high qualities of British honey. In taking this matter in hand, it is only right to mention that neither my brother nor myself make bee-keeping part of our profession, others in our family do, but are too far resident from Glasgow. It is only an earnest desire on our part to see our 'hobby' getting more popular, of seeing new outlets opened for the sale and use of honey, and, at this particular stage, to show that honey is, and can still be classified, as one of our important food productions, which has encouraged us to make this venture, which we are hopeful will eventually meet the object we have in view. We are anxious to get the names of those manufacturers who use honey in their goods, and any information as to articles which will assist us in those special classes, in making them as interesting as possible.

At a later stage we hope to submit the extent of our exhibits more fully, meanwhile will be glad to get all the information possible.—E. McNally, *Main Street, Rutherglen.*

COUNTY ASSOCIATIONS.

[1418.] Your article on page 2 should make every office-bearer of any such association hasten to set his house in order, for there is no disguising the fact that some of our County Associations are far from being so prosperous as they might and should be. I have just been looking through the Reports of the Affiliated Associations for 1886, and I have found one that ought to prosper amazingly, viz., Leicestershire, for they offer '*a sure market for honey*' as one of the advantages of membership. I must join that, I think. Why, Mr. Editor, the bee-keepers' millennium must be at hand.

The objects of the Hertfordshire B.K.A. deserve recapitulation:—'To teach the residents of the county a more humane and profitable system of bee-culture, and the increase of the home supply of pure, wholesome food among the labouring classes.'

Is it not possible that, if our different B.K.A.s had been satisfied with this pithy extract from our Hertfordshire friends' report as their text, and then worked up to it, that you would never have felt the necessity of laying on the rod of correction. Have we not one and all promised too much and done too little? I am much afraid the profits of bee-keeping have been made too prominent a feature when recommending the modern system, forgetting that many of our hearers would, through their own inattention, fail to get any profit. Would it not be well to at once adopt the lines laid down by the Hertfordshire B.K.A., and do our best to show *all* how they may, at a comparatively small cost, become possessed of a good, wholesome table delicacy, leaving the *few*, who eventually prove successful, to be helped according to their various necessities, and encouraged to make a business of it? Even of the few who succeed, there will be many who cannot manage more than perhaps six colonies. Such should have no difficulty in disposing of their surplus locally, either by their own efforts entirely or with a little assistance from the local secretary of their association. I have great faith in the idea propounded in the last paragraph but one of your remarks on 'Keep your colonies strong' which appear on page 509 of the 1887 volume, and I propose inviting all members in my province to communicate to me particulars of their wants, and also any of surplus they may have for disposal, with a view to making our M.B.K.A. more useful. Will any one kindly discuss the present status of our Associations, and suggest useful remedies?—W. M. Graham, *Provincial Secretary of the Middlesex B.K.A., Latymer Lodge, Lower Edmonton.*

COUNTY ASSOCIATIONS.

[1419.] The county association of which I am honorary secretary, has not begun to fill the place it was intended to take amongst the bee-keepers in its radius, therefore it is, to say the least, discouraging to read the remarks under the heading 'County Bee-keeping Associations' on page 2 of your issue of the 5th January, 1888.

If the committee of the B. B. K. A. consider their organization perfect, by all means let them come and assist their country cousins, but do not let their organ write or call *stinking fish* when it is not in a position to know what many of the county Associations are doing. Instead of the old-fashioned bee-keeper being left far behind, we have those amongst us, *lately unearthed*, bee-keepers who have been bee-keepers long before the *Journal* existed, and who are (as far as is generally known) a long way ahead of the recognised *savants* in the successful management of apiaries.

Out of the list, 'approximating to 300 subscribers,' how many were bee-keepers? I am quite ready to acknowledge that the subscriptions of non-bee-keepers are valuable to treasurers of county associations, but their interest will not continue: and my aim is and will be to get bee-keepers throughout the county at as short distances apart as possible to work their districts up: by this means I believe county bee-keepers' associations will prosper. These district workers will be a great assistance to county secretaries, but at the same time they will give him more work, as there will be more shows to organize and more honey to negociate the sale of.

What will all this lead to? I would venture to assert an honorary treasurer in every county, with a paid secretary; is not this the experience of floral, horticultural, and agricultural shows?

My committee consists of eleven members, they have been called together twelve times, and have put in eighty-two appearances. I have no record of their attendances at shows, but this would add materially to the time the committee have given to the cause. Please do not make our work harder by writing about alarming symptoms of decline, but rather, I would suggest, in every issue impress on your readers how intelligent bee-keepers could assist the cause by joining their county association, and bringing before its working head the

way in which he could best benefit their particular neighbourhoods.

As an association we are ready to send out lecturers in the winter, experts or advisers in the spring and summer, and to arrange for the sale of surplus honey; in return we ask that bee-keepers in each district will get so many subscribers that the association is not put to a large money cost.—W. Lees McClure.

MEMS. BY 'WOODLEIGH.'

[1420.] As regards the statement of the 'Iowa Homestead' about bees selecting a home before swarming, I can endorse it somewhat. There is a village called Peasemore about two miles from where I live in a 'bee line.' Now, nearly all the stray swarms from our part go straight off in a direct 'bee line' for Peasemore. The only conspicuous object in the village is the church spire. Now, bees have tenanted the said church roof, also the tower, many times, but rarely live through the winter. One would suppose that scouts or spies had investigated the district for a suitable spot in which to start a new colony, or why should bees start off in a particular direction as soon as out of the hive if there was no preconcerted plan decided on before the swarming took place. Nine miles seems a long distance for bees to travel, and a longer distance for scouts to go in search of a *dulce domum*, but I can vouch for a swarm of bees flying six miles in a bee line. It happened some years ago, and the man who rode horseback after them told me himself. His master, a farmer, kept a large apiary in those days of 100 stocks, and a man used to have to attend to them, and a very busy time he had in May and June, during swarming time, as they were all in straw skeps. The swarm in question, a very large one, came off just as the farmer returned from the fields on his horse. The beeman says, 'Maister, they means off.' 'Here, George,' says the farmer to his factotum, 'take a hive, jump on my horse and follow them.' George followed over hedges and ditches, through fields of waving corn, across commons of gorse, still keeping them well in view, till weary of wing they settled in a piece of wheat. Here George hived them, gave his horse a rest, borrowed an old woman's apron, tied them in, and trotted back home with them. Evidently, if this particular swarm had selected a cavity in some wall they never reached their intended destination.

I notice 'Mr. T. H.' considers his winter packing more simple than friend 'A. E.'s,' and as I consider my system more simple, more economical, and more utilitarian than 'T. H.'s,' I give it for what it is worth. I buy some cheap unbleached calico at 1¾*d.* or 2*d.* per yard, and form it into bags 20 or 21 inches wide. The sewing-machine comes in handy here, as a dozen or two bags or cases can soon be run up together, leaving one end partly open. Now take your clean wheat-chaff with dust sifted out, and about half fill your bags, or, as my little girl calls them, the pillow-cases, then finish the sewing up. Here you have a wrap that you can mould to your frames, and long enough to lap or hang down to the bottom of the hive behind the frames or dummy. I always use two or three quilts of hemp carpet, then the chaff pillow or cushions over them. Then if a lump of candy is required by the bees, what is more easy than to roll back the cushion, place your candy over feed-hole, and replace your cushion, retaining the heat of the hive, and causing no disturbance to the bees. Then in spring, during feeding time the cushion will cover the feeding bottle by lapping over it and reaching the outsides or ends of frames, thus retaining the heat when most needed for the well-being of the colony. Then later on, when the crates of sections are on, their winter cushion still holds its own and mounts the upper deck, keeping the super warm and comfortable, and preventing the chill night air and lower temperature driving the bees out of the sections down to the brood nest below for warmth.

Anent the mention of honey in the Old Testament, Genesis, chap. xliii. ver. 11, one would think the Patriarch must have been a bee-keeper on a large scale, as we find him possessed of *honey* a long time after the *corn* was all consumed, and we should expect the famine was caused by drought, consequently herbage and flowers suffered equally with cereals.—Woodleigh.

KOERBS' NEW ARTIFICIAL COMB AND CELLS.

[1421.] I have read about Koerbs' new artificial comb with great interest in yesterday's *Journal*. I *guess* he does away with the *mid-rib* as then the queen would not have a place to deposit her eggs; and if he makes the cells *right through* the combs the whole of the honey could be extracted at one operation without having to take them out and reverse.—J. Hall, *Station Hill, Wigton, Cumberland, January* 6, 1888.

A NEW ARTIFICIAL COMB.

[1422.] Is it possible that the comb invented by Mr. Koerbs, an announcement of which appeared in your valuable *Journal* of the 5th inst. (No. 1407), may simply turn out to be combs with cells of a yet larger size than such as are built by the bees for the purpose of raising drones? We do not find pollen deposited in drone-comb, therefore, is it not probable that foundation with cells somewhat larger still would readily be drawn out by the bees which, from their size, would be avoided by the queen when depositing eggs, but which would be utilised by the workers when storing honey? Such is, perhaps, not improbable. May I suggest the use of foundation with cells measuring $\frac{12}{25}$ of an inch in cross section. Should the queen deposit eggs in these the size might be somewhat increased.

The matter could be easily tested, but the cost of machines for impressing foundation for experimental purposes would be greater than most bee-keepers could afford. I should, however, be glad to contribute my share towards the cost if a few bee-keepers could be found to unite for this purpose.—T. M.

NEW ARTIFICIAL COMB, &c.

[1423.] After reading article on (1407) p. 7 of last week's *Journal* on 'A New Artificial Comb,' I said to myself, What a simpleton I have been! Why, for the last two years I have had combs, and newly drawn out at that; that the bees would not breed in or store pollen; they would use them for nothing but honey, even when placed in the centre of brood-nest, and for that very reason I threw them all into the melting-pot. I thought to myself now, If I had but got them by me now how useful they would be. The thought then struck me, Had I cooked them all? I went straight away to the honey room and pulled down (empty) comb after comb in hopes that one had escaped the melting-pot. I had almost given it up as a bad job, when well nigh the last comb had been removed I came across one, but much damaged. However, I have cut out a sample large enough to show what it is like. Now, the thought never struck me of making comb-foundation after the same pattern until I read the above article. I set to work straight away and made a sample foundation, which I think will fill the bill to a T. Now I don't say that the bees would not breed in them if all the combs in the hive were of the same pattern (for they will do some very curious things sometimes), but I am certain that if they had a fair amount of ordinary worker and drone comb in the hive to breed in they would not use these said combs for anything but honey,

I write this simply to show that the discovery is not new (that is, if Mr. Koerbs' discovery is the same as mine; I don't know whether it is or not), although I had not taken advantage of this discovery until reading the article above referred to. I have sent samples of both comb and foundation, with explanation, to Mr. A. Neighbour by the same post as this. I have no doubt Mr. N. will show you the same upon application; he also will inform you whether he is disposed to patent it or not, or whether he intends making it for sale; if he does we can soon get a mill cut for making it. I have also sent him a sample of new comb-foundation, which perhaps he will show you, invented by me, which I think will do away with wired frames and wired foundation. It has other advantages which, if it turns out as I anticipate, will make a revolution in bee-keeping. I am getting up a new section case, which I think will be welcomed by many. Mr. N., no doubt, will send a description (when ready) to the *Journal*; if he does not I will. Yesterday (Sunday) was a splendid day for the bees. I walked through the apiary and put them through the roll-call, and they all (60) answered to it. Of course I never opened them, but if we get such a nice day sometime this week I shall remove all the covers and chaff-cushions to give them a good airing in the sun.—WALTER MARSHALL, *Messrs. Neighbour's Bee Farm, Buncefield, Hemel Hempstead.*

[We received the above communication too late to allow an opportunity of seeing the samples referred to; but if there be any merit in the discovery we are pleased to give our correspondent the credit of priority.—ED.]

HONEY SCRIPTURE TEXTS.

[1424.] 1403, and 1411, on 'Scripture texts,' still need a little clearing and addition. 'Honey' is named fifty-two times in the Old Testament and four times in the New. 'Honeycomb' is named eight times in Old Testament and once in New Testament, making sixty-five times in all. 'Sweeter also than honey and the honeycomb' should surely be reckoned once for each word, &c.

I add the whole of the passages naming 'honeycomb' for clearness.

1 Sam. xiv. 27. Psa. xix. 10. Prov. v. 3, and xvi. 24, and xxiv. 13, and xxvii. 7 (not xxvi. 7). Cant. iv. 11, and v. 1.

Add for 'Bees' Judg. xiv. 8, and Psa. cxviii. 12, making four occurrences.

Add for 'wax' Psa. xxii. 14, and Micah, i. 4, making four occurrences.

Add for 'hornet' Exod. xxiii. 28, and Josh. xxiv. 12, making three occurrences.

'Stingeth' (but, like an adder) Prov. xxiii. 32, and 'Stiug' 1 Cor. xv. 55, 56.

'Swarm' is mentioned only in Judg. xiv. 8, in connexion with bees.

It is worth noting that no queen-bee is mentioned: while their undesirable tenacity of pursuit is the point of Deut. i. 44. Their order and industry are not referred to, but the ant instead is the entomological pattern for us in these respects.

Qy. 1. Is it because bees sting so readily?

Qy. 2. Do all bee-keepers, if so, learn the implied warning?—E. C. P.

HOW BEES EXTRACT POLLEN FROM FLOWERS.

[1425.] In regard to the visitors of Asclepias cornuti (common milkweed) Dr. Hermann Müller observes that they 'slip upon the smooth parts of the flower until the foot enters the wide inferior part of the slit, in which it at last gets a firm hold.' Mr. T. H. Corry describes the insect as grasping the back of a nectary, and plunging its proboscis into its cavity, 'endeavouring at the same time to get a firm and sure foothold on the unstable flowers,' until the insect at length places one of its feet into the wider part of an alar fissure.

Having collected insects on the flowers of six species of Asclepias, I regard the normal action of the most common and most efficient to be that they hold on to a flower, or several flowers, in such a way that their feet go down below the angles of the alæ, and when the legs are drawn upwards they are caught between the strongly projecting hoods and guided by them over the entrance of the stigmatic chamber, which occupies the narrow interval between their bases. Of native insects, the most common visitors I have observed on A. Sullivantii, are humble bees (*Bombus separatus, B. Pennsylvanicus,* and *B. scutellaris*) and Danais Archippus. The feet of humble bees reach down as far as the basis of the petals, and I have often found the pollinia fastened upon their tibial spurs as well as on their claws. I have also found pollinia of this species on the spurs and claws of Danais Archippus, and high up on tarsal hairs of Prionomyx Thomæ.

In a similar way a specimen of Scolia bicincta shows pollinia of A. cornuti on the tarsal hairs. However, the gynostegia of these species are so large that the feet of many visitors will not reach far below the angles of the wings, and when this occurs the claws are the only parts which are readily caught. The importance of the hoods in guiding the legs of insects over the angles of the wings is more apparent in the smaller flowered species, since the more delicate wings catch hairs which are not only very fine and short, but which are also situated much higher up on the legs. Thus hive bees caught on A. Sullivantii and A. cornuti show pollinia only on their claws and pulvilli, but they have the pollinia of A. tuberosa, A. incarnata, and A. verticillata scattered upon the hairs of the tarsi. A specimen of Argynnis Cybele, which I caught on A. cornuti has pollinia of this plant on its claws, and pollinia of A. tuberosa on the tarsal hairs. . . . .

H. Müller, who supposes that the whole foot enters the stigmatic chamber, says: 'When the insect tries to draw its foot out in order to proceed further, the diverging claws are caught by the apposed edges of the anther-wings, and guided upwards in the slit so that one or other of the two claws is brought without fail into the notch in the lower border of the corpusculum and there held fast.'

On the same subject Mr. Corry says: 'When the foot reaches the superior end of the alar chamber in which it has been guided, one at least of the two hooked claws upon it, or some part of the foot in the case of Diptera, must easily enter the hollow cavity of the corpusculum, which lies in such a position that this result is inevitable.'

The importance which these authors attach to the view that the whole foot enters the chamber, in my opinion, rests on a misunderstanding of the mode of insertion of the pollinia, and has led them to overlook the precision with which a corpusculum comes to be fastened to a hair or claw. The corpusculum is placed so nicely at the top of the wings that its cleft is fairly continuous with the slit between them, and I cannot conceive that the contrivance works normally unless the particular part, *i.e.*, a single claw, hair, or pulvillus, to which the corpusculum becomes attached, is caught between the wings and guided by them into the cleft.

Believing that all processes are caught as the leg of the insect passes over the angle of the wing, I suppose that only a single process is caught, and that a claw is caught in exactly the same manner as a hair or spur. In a careful examination of the feet of 116 hive-bees which were killed by being caught on the flowers of A. Sullivantii, I have found that, with but two exceptions, when a foot was held by the wings, only one claw was

between them, the other being free, or less often the pulvillus was held between the wings and both claws were outside.

When first withdrawn the pollinia lie in the same plane. In a few minutes the twisting of the retinacula brings the pollinia into nearly parallel planes, but the upper ends are still separated by quite an interval. According to the authors to whom reference has been made the pollinia are inserted by the corpusculum. From the analogy of observations made on the movements of the pollinia of some Orchidaceæ some advantage might be looked for in the slow movement of the pollinia of Asclepias. Indeed, Mr. Corry, who has observed this phenomenon in A. cornuti, states that it is of advantage, although he fails to show it; and I think it impossible so to do on the supposition that the pollinia are introduced by the corpuscula. He says:—

'Some considerable time, moreover, must elapse after the pollinia are extracted before the corpuscular appendages are so far dried that both pollinia of the same corpusculum can be introduced through the fissure into the alar chamber, and in the meantime the insect has had time to reach another flower or plant.'

On another page he observes: 'If the movement did not occur on the part of the pollinia, their broad surfaces would lie at right angles to the alar fissure, and their insertion into it in this position through the notch would in consequence be rendered a much more difficult, if not an altogether impossible operation, or else the pollinia in being slipped in would become folded in the opposite direction, and the less curved border which emits no pollen tubes would be first inserted into the fissure.' But what is to prevent this consequence before the movement takes place? Whatever might happen there is obviously nothing to render the introduction of the corpusculum itself more difficult before the movement occurs than afterwards, so that the slowness of the movement is hardly an average under this view. If the corpusculum were very slender or flattened so that a thin edge could be presented to the slits, there would be no difficulty in understanding how it could readily slip into the stigmatic chamber; but it is a rounded body, and is relatively large in comparison with the entrance to the cavity.

Of course, if the whole foot of an insect commonly enters the stigmatic chamber, it is not hard to understand how the corpusculum should go in with it. But when the corpusculum is fastened to a hair which is directed outward and downward from the leg of the insect, and which is often so short that the corpusculum is fairly in contact with the leg, the difficulty increases.

In the examination of the feet of hive-bees killed on the flowers, I have failed to find a single case in which a corpusculum was attached to that part of the foot which was held between the anther wings. In my opinion, therefore, the structure of the corpusculum is so far from facilitating the introduction of the pollinia that it prevents the part to which it is attached from being again caught in the slits, and until the movement occurs the corpusculum with its two pollinia will pass over the entrance to the stigmatic chamber without being injured.

After the movement occurs, if the corpusculum be examined from one side, it will be observed that the retinacula project outward and downward. Since the parts to which the corpuscula are attached themselves project outward and downward, the retinacula finally stand nearly at right angles to the leg of the insect. The retinaculum near the point where it joins the pollinium, is bent rather suddenly, so that the pollinium appears to be flexed upon it. This flexure, which Mr. W. H. Leggett has called the knee, is very prominent.

There is quite an interval between the knees, and the membrane of the retinaculum of the knee is expanded transversely to the plane of the pollinium. Robert Brown has observed in A. purpurascens, that the part of the retinaculum extended between the knee, and the pollinium remains attached to the latter when it is found in the stigmatic chamber. This expansion of the membrane serves to prevent the withdrawal of the pollinium after it has been inserted into the cavity, and when drawn against the closely opposed edges of the alæ in the upper part of the stigmatic chamber, facilitates the rupture of the retinaculum.

Judging from the structure of parts which are readily caught between the anther wings nothing could be more natural than for one of the knees to slip into the entrance to the stigmatic chamber, and the movement is intended to turn them into such a position that this will occur. When, therefore, the movement has taken place, and the insect draws its leg over the angle of the wings, the corpusculum with the claw or hair to which it is attached, passes on without being caught, while one of the knees of the pollinia readily enters the stigmatic chamber, and the pollinium enters with it. When the knee has reached the upper part of the cavity, and will go no further, the retinaculum is torn across and escapes, leaving the pollinium in position to effect fertilisation.

In repeated trials at artificial pollination of the flowers of A. cornuti, A. Sullivantii, and A. incarnata, I succeeded three times in the case of A. Sullivantii in separating the pollinium from the retinaculum without withdrawing the latter from the slit, and thus was enabled to insert a pollinium, and to draw out a corpusculum at the top of the ala with its two pollinia by the same movement. But in all other cases a pull that seemed sufficient to break the retinaculum freed it from the slit so that the corpusculum at the top remained intact. Accordingly I have seen no difficulty on the supposition that the pollinia are introduced by the knees, in the observation of H. Muller, who says:

'In several flowers which I dissected, the corpuscula and pollen-masses were still in their places, though pollinia, which must have come from other flowers, had been inserted into the stigmatic chamber.'

In a number of cases observed by me on A. Sullivantii the movement which turns the knees toward the flower is completed in about seven minutes, though it has proceeded sufficiently in five minutes to turn the flexure far enough to render insertion quite likely. With the view of pollination stated in this paper, the slow movement is plainly of advantage, because a knee can hardly be caught by the wings until it has occurred.

Now, since only one pollinium is inserted into the stigmatic chamber, there is an economic disposal of the pollinia. The interval between the flexures is so great that only one of them can be caught, while the other passes by the slit uninjured. There are, therefore, two chances of a pollinium being transferred to another plant. If both pollinia were left at each act of pollination, there would be but one chance of cross fertilisation. Moreover the chances of cross-fertilisation would be reduced from the fact that the stigmatic chambers would be more nearly filled by pollinia from the same source, while if they are introduced singly, there are more chances of a chamber receiving a pollinium from a distinct plant.

As two pollinia are fastened together, there would be but one chance of pollination occurring if the pollinia were inserted by the corpuscula, while there are two chances of a knee being caught. When a pollinium has been removed the broken retinaculum may be caught in a slit, and remove a second corpusculum with its two pollinia. When this combination of two corpuscula and three pollinia is drawn over the angle of the wings, there are three chances of a pollinium being caught. Whenever a pollinium is removed two new pollinia may be substituted for it, and a large combination of pollinia may result arranged either in a unilateral series or dichotomously. In either case the chances of the insertion of pollinium equals the number of pollinia in the combination.

If the foot to which the first corpusculum of the combination is attached must enter the stigmatic chamber, of course there would be but one chance of pollination taking place without regard to the number of pollinia. Such an accident would be likely to destroy the whole combination. As already observed, on the large flowers of A. Sullivantii and A. cornuti, the shorter hairs on the legs of insects are not readily caught, so that the number of parts to which the corpuscula may be attached are reduced to the minimum.

For instance, the only parts of the leg of a hive-bee which can remove the corpuscula of these species, are the two claws and the pulvillus. The leg will thus remove three corpuscula, and since these bodies render useless the parts to which they are attached, the broken retinacula not only take the place of the parts disqualified, but increase the number of parts to which the corpuscula can be attached. By means of these combinations, therefore, the leg of an insect has its capacity for carrying pollinia greatly increased. . . .

Finally, I have seen the pollinia of A. Sullivantii introduced into the stigmatic chambers in the manner described. The pollinia and the entrance to the chamber in this species are very large and are easily seen, and hive-bees move so slowly in effecting pollination that, after a knee is caught, one can see the pollinium slowly disappear between the wings, so that there can be no doubt as to the manner of insertion. Commonly, however, the insertion of pollinia occurs so rapidly that it is impossible to see how it really happens. After a pollinium has been introduced into the chamber, hive-bees always have difficulty in breaking the retinaculum, and they lose their lives on account of this as well as on account of the difficulty in drawing their claws through the slit. When a foot is held by a retinaculum the pollinium is found in the chamber, with every indication that it was introduced by the knee.—Professor Charles Robertson, *Blackburn University, Chicago, Ill.* (*Botanical Gazette.*)

THE BLUNDERS, ACCIDENTS, &c., OF A NOVICE.

[1426.] Twelve months ago last Michaelmas we decided to 'go in' for bees in a small way. A hale, drooping old man, who had drawn the sickle and swung the scythe for fifty harvests, and flung the flail for fifty winters, now in his eighty-fourth year, offered us four straw hives for 24*s*. Bargain was struck, and night fixed for removal; and, forsooth, this first step was a step in the dark, for we knew absolutely nothing about bees—had never heard of bar-frame hives.

In our ignorance we made what we considered a good bee-house, capable of accommodating eight colonies in straw hives. This was firmly fixed in the ground, facing south, and fully exposed to the strong winds that swept with such great force athwart this flat part of the country.

The night for removal was very dark. We joined the old man, son, grandson, donkey and cart, and soon arrived at the old stand. With the lantern the old man led the way, and cautioned us not to talk, or nothing could be done. Superstitious old man, as we shall see.

About the hive entrances there was quite a hubbub, as if the bees had been disturbed. The clothes were spread, donkey and cart at the garden gate, 'we four' ready for action, but after looking under one of the hives it was decided to leave them till another night, for the bees covered the board. Just at this moment the old man exclaimed that they were about his noddle, and fumbled about, expecting every moment to feel the dreaded stings.

'We four' went the following evening. The donkey stayed at home. The bees were quiet. The father and son carried two, and the grandson and I two; their two on the old stand, our two slung on a pole.

We had a mile to carry them. Half way we halted; my pole end rested upon railings, my companion's perilously upon the end of a stick. The pole slipped, and the heavy skeps went suddenly to the ground. No damage was suspected, so you may imagine our feelings when it was found that the comb in the hive which struck the ground first was all broken from its holding. The hive was lifted in the cloth and put upon its new stand, and left till the morrow. But before leaving the bees the hale old man of eighty-three said, 'Now yow must talk tu 'em, tell 'em tha'r yars, an' that yow'll be a good master tu 'em.' We did as he bade, of course, there and then, and they *have* stayed with us, although, like us, they have had new experiences. As we were walking home, the old man had other and stranger things to tell us about these mysterious little 'critters.'

'It's many years sin we bought our fust skip. We got 'em fro Mrs. K——, an' forgot to talk tu 'em, an' tell 'em tha wus ours. We had bad luck wi' them lot. Not long arter Mrs. K—— died, an' wen har funeral wus passen our gate, we wus reminded of the bees, an' went down an' luked at 'em. Bleeve me bor, wen we got there them bees wus awready awasten, and wen we tand up the skip nearly all the bees wus dead.'

We suggested that the bees might have died from want of food.

'Oh, no, tha din't! no, no; tha had plenty t' ate, but we din't talk tu 'em bor, that wus the reason. The next skip I got fro Mrs. B——, an' wen I got em' hum I laned over 'em an' rapped on the skip wi' my finger, an' told 'em tha blong'd tu me, an' bor, them bees done well, an' I never bought no more. An yow mussen't ha no words about 'em, du tha *con't* stop wi' ye.'

We were anxious next morning to get to the ill-fated hive. It was a complete wreck—honey running, dead and dying bees, and what to do? We scarcely know what we did. Knew, however, that all the bees were lost, a few pounds of honey only saved.

Not many weeks had passed when, during a cold and windy night, our new bee-house was blown over on its back, where it lay till the morning, and each of the three hives upset. All were made more secure than before, and no further inconvenience or loss resulted.

A farmer friend, who was the only one in the village at the time who had modern hives, when passing one day, intimated that our hives were disgraceful old things, and that we must not expect much from them. He advised Cowan's *Guide*, which we immediately procured, and went through and through with the greatest avidity. We became fascinated, ordered one of Walton's 10*s*. hives, had it fitted ready for a reception.

In driving for the first time we were very successful, cut the old skep in twain, and gave the best comb to the bees in the new hive. But whether from want of a more prolific queen, or experience on our part, we know not, at the end of the summer they had not stored enough for winter, which necessitated feeding, and to strengthen them driven bees were united.

Late in May both the remaining skeps showed signs of swarming, and clustered about for many days—one of them for weeks. We watched them constantly, and with absorbing interest. The first swarm issued and clustered very awkwardly round the lower part of the trunk of a pyramid pear-tree, just near the bee-house. With much difficulty we succeeded in getting them into a straw hive, and in the evening placed them upon the stand near their old home. Being our first swarm we were delighted at having secured them.

Next morning, when amongst the fruit trees, we heard such commotion in the air, and sure enough there was another (?) swarm out. We hastened to the spot, regarding nothing but the bees. It was soon evident they meant flight, and forthwith, in a direct line, made for

an old willow-tree in the next meadow. We followed, determined not to lose them. They must have selected this place before swarming, as will appear more evident presently.

A ladder was procured and a skep, and we tried all ways to get them out of the tree, but to no purpose; we had to leave them in the end, though most reluctantly. We returned, therefore, disappointed, to find—what? Why, that the very bees which had given us so much trouble and delight the day previous were the same bees which had reissued without provocation and gone to the tree. We have reason to think with 'Iowa Homestead' (1413) in this week's *Journal* that bees do select a place before swarming.

At the back of our bee-house is a hedge and not long before our second swarm issued a score or so of bees were observed hovering about one place. We guessed then that the bees were selecting a place to cluster, which proved true, for soon after a swarm came out with a rush and went direct to the spot over which the few had hovered, and in a few minutes they were all clustered upon a slender thorn twig. As if to recompense us for the loss of our first swarm, the same day our attention was hurriedly directed to some bees which were clustering near the ground not far from the bee-house. With a straw hive we hastened to the spot, and quite a curious phenomenon presented itself,—a cast, undoubtedly, and all clustering upon a common nettle. The skep was placed over them, and in five minutes most of them were safely hived.

We knocked together a hive to take standard frames and drove the bees from the hive whence the lost swarm had issued and stood them where the old hive had been; but they resented, though dry-sugar feeder and full sheets of foundation seemed all that were required for their comfort. They left; how and whither we never knew, but think they went to the other hives.

We did not move the hive, however, and about this time we left and were away about a month. It was August, a month when most of us would rather be at home, the time of harvest and of fruit. It was especially hard to leave the bees, for some might get lost—a flight or two perhaps. But we had no thought of gaining a swarm, which, to our amazement, was only too true, for we found on returning that the frame-hive which we had left empty of bees, but with sugar and foundation still in, was full of wasps. Here was a job. The store they had stolen who could tell? For hours we waged war with those yellow thieves, and, as we thought, killed nearly all of them. They were troublesome, however, till late autumn. Faint heart never won fair anything. We began to take the *B. Bee Journal*, which has been a pleasure and profit to us to this day.

Driving bees is a novelty here, but having been begun we hope the days of the sulphur-pit are numbered; of the old straw hive we cannot hope so much. The apathy of the cottager, speaking generally, is extraordinary; they are for the some part thriftless, sensual, poor. After work the pipe and the pint seem the only attractions.

We had little difficulty in obtaining the consent of cottagers to allow us to drive their bees. Altogether during the autumn we drove eighteen lots and introduced them after uniting into modern hives.

Wishing to get rid of our new bee-house we changed it for a skep of bees, which is the only stock now that is not in a bar-frame hive. Through autumn we had five feeders going (syrup), and had united in the five hives eighteen lots of driven bees. The most united in one hive were five lots, which is our best, and are wintered on eight frames.

We had great difficulty in driving in every instance where cross sticks had been used. Late in the autumn we drove to a neighbouring village with the intention of driving ten out of fifteen colonies. The comb was so firm with the sticks that at the end of half an hour many bees were left in the first hive, and at the end of the third we were almost fagged out and disgusted. No. 2, which was placed on its old stand after being driven, was a disappointment, for just afterwards when we turned up the hive not a bee was left. They had forced their way into the adjacent hives only to meet their death. We could not wonder, for the hives stood all in a row not an inch apart.

The other hives were brought home here and driven with perfect ease. Let us caution any readers who from inexperience may be tempted to draw the cross-sticks out of the straw hives before driving. They are generally so firm that in pulling them there is great danger of breaking the comb from its holding and thereby crushing and impeding the exit of the bees.

Now perhaps some one will be good enough to assist us over a difficulty. It was our fault that father made an observatory hive in the autumn, which does not take a standard frame. The top bar is just fifteen inches, and as we found it necessary to transfer the bees to another hive prepared for winter we found the frames only just long enough to lie upon the inner walls.

After transferring we united three lots more of driven bees to them, making five lots in all in the one hive. It was necessary to take two unfinished frames out now and give them finished ones, which we did. So now they have six top bars fifteen inches and two seventeen inches long. As this is our strongest stock we wish to transfer them in spring into a storifying hive.

We have made a capital hive four-storey, and we want to know how to proceed so that the short top bars may be replaced by standard frames. If a change can be made we have enough of the latter unfinished. Supposing frames *can* be changed will it be wise to storify when we have no finished frames of comb for use in the second, third and fourth storeys? To-day (Saturday) the bees have been out in large numbers; their first duty was to bring out all the dead, which they carried quite away. We allowed the sun to shine upon the quilts awhile and ventured to peep at the stores, as there was some doubt.

In conclusion, we are sure that our worthy Editor will agree with us in thinking that, whilst Guide-books are good and indispensable, there is no school like experience. Our blunders, accidents, and disappointments, have not in the least diminished our interest. We have a larger hope than at the first. We are satisfied that the step from the straw skep to the modern bar-frame villa was progress, and having started, our watchword ought, can, and must be still, Progress.—F. GOODRICH, *Methwold, Norfolk, January 7.*

THE PRICE OF HONEY.

[1427.] Mr. C. Howes [1406] pays me, I think, a very poor compliment in thinking that I do not take the trouble to read carefully what has appeared in the *Journal* from the pens of several writers to whom he refers, 'Mr. Useful Hints,' Messrs. Godfrey, Simmins, &c. Evidently Mr. Howes still labours under the same delusion that in this district we possess the same advantage as he enjoys. Let me undeceive him again, once for all, by telling him that we have no market or other place within twenty miles at least, nor do I know of any such a place anywhere where 'honey vendors' have a chance of standing side by side with their several 'gets-up,' as he calls them, therefore we have no chance of showing any superior 'get-up' in our goods for sale, neither do I rush into the market to sell at a low figure just because others do. I have sold none for less than *8d.*, more for *10d.* and *1s.* per section; but it has been a very difficult matter to do. I, however, cleared out my last about a month since at *8d.*, not a great price after waiting three months, and then had to go to

London to do it. I have found two or three markets for another year by doing so, which is some small consolation.

I am very pleased to receive any hints on any subject, but I flatter myself that I have a little common sense not to put the 'sulpher pit' honey on the same level as extracted. It is not I, but the uneducated public who do it. There is no chance of comparison. Honey is honey, that is all they know, and if you try to explain and endeavour to show how and why the difference, they only look at you in blank amazement, as much as to say, Do you think me a fool not to know honey?

No doubt, if the B. B. K. A. were to publish some leaflets on the different qualities of honey, it would have a most salutary effect.

Mr. Howes next refers to 'our great masters,' trying to increase the number of bee-keepers in this country, yet advocating the 'down-grade' in the price of honey. I do not see this; I do not think they trouble much about the price of honey, they are generally great producers or manufacturers of bee-furniture and appliances generally; if they seek to push and extend their business it is no more than they have a perfect right to do. If bee-keeping is to be a paying industry, it must be conducted on ordinary business principles of profit and loss, and consider time as money spent in its cultivation. This, I think, is where the mischief arises to a great extent, men with their regular salary, and clergymen to a large extent, as if they had just begun to realise the advantage or wisdom of acting on a celebrated bishop's advice to his clergy, 'Keep bees, Keep bees,' have gone in for many things latterly, fruit, vegetables, bees, and photography. Another reason is the middle man, who advertises for honey at 6½*d.* per lb., this also tends to make a false impression and lower the price, while the middleman makes his thirty and over forty per cent profit, so that the consumer is not in any way benefited by the low price the producer gets. What then are bee-keepers to do? In the first place (if it is not practical for the B. B. K. A. through county associations to assist bee-keepers to sell their honey, which I submit they could without much difficulty), let all bee-keepers refuse to sell their honey to those middlemen and look out for the retail seller who supplies the consumer direct, thus dividing the profit between two instead of three parties. Considering the uncertainty of the weather season, honey cannot in many districts be produced at 6*d.* per lb. if time has to be paid for in producing it, as it clearly should be, or else those who have to give all their time to it had better look out for even a chimney-sweep's business, where he can get his time paid for. There are but very few businesses one can combine with it, to work either successfully; even at this season, I find every day brings something to do, or to be looked into.—SHERBORNE, *Dorset, January* 4, 1888.

POLLEN FOOD.

BY PASTOR SCHÖNFELD OF TENTSCHEL.

In my last article I endeavoured to prove that bees are unable to prepare for any length of time the chyle required for the nourishment of the brood, unless they have a supply of nitrogenous food, and that, in the absence of collected pollen, from some reason or other at the commencement of breeding they extract it from old combs which contain an abundance of it. All practical apiarists will have concluded from this that it is well to insert one or two old combs in the neighbourhood of the winter quarter of the bees when a colony is without pollen at the end of the season, and when there are only new combs in the hive. By this simple and easy expedient such a colony is very materially assisted in the preparation of the necessary chyle: without it, indeed, the bees would be unable to subsist, for as the brood require albuminous food to build up their body, so the bees require it for their maintenance. It is quite incorrect to suppose that a colony without pollen is able to survive the winter in a perfectly healthy condition as long as it has a plentiful supply of honey. During the whole winter it is impossible to find a single bee the intestinal canal of which is not full of particles of pollen, being an undeniable proof that pollen is an indispensable food of bees. Bees found without particles of pollen always, and without exception, belong to a colony which had no pollen, and only newly made combs at the beginning of winter, but such colony would hardly survive the winter. How indispensable albuminous food is to drones I learnt last summer. It is a well-known fact that queens and drones do not consume pollen, but only honey which they take from the cells, the necessary albuminous food being supplied to them in the chyle with which they are fed by the workers. In order to find out how long drones are able to live, if merely fed on honey, I made the following experiment: I took two combs, containing about 2—300 grains each of freshly gathered honey and surrounded each comb with wirework, a space of ½ centimetre being left between it and the upper ends of the cells, so as to enable any drones on the combs to move comfortably in every direction. One of the two combs was protected by a second screen of wirework, a space of 1 centimetre being left between the two, so that any drones on this honeycomb would be compelled to exist upon honey alone, as they could not possibly receive food from the worker bees on the outside, while the drones on the first honeycomb were not prevented from receiving chyle through the grating.

During a week of cold and rainy weather in June, when the drones showed no particular inclination to leave the hive, I took 200 drones from one large colony, dividing this number equally between the two honeycombs, described as above, and then placed the two combs in the middle of the brood-nest, where I watched them carefully. In the evening of the fourth day the drones in the double cage which could not be fed by worker bees from without, were in such a feeble condition that they seemed to be unable to live much longer. In fact, on the fifth day all were found dead, except four, which were just able to move. The drones on the comb which the workers were able to supply with chyle, remained in perfect health, and flew off briskly when I liberated them a few days afterwards.

What had caused the death of those unfortunate 100 drones which in all respects, save one, were in exactly the same position as the surviving drones on the first comb? Surely it was the want of nitrogenous food alone. Worker bees, subjected to a similar test, remain alive much longer than drones—for though the latter appear most phlegmatic, they are in reality very sensitive creatures—if it were possible to keep worker bees in confinement as long as they are able to exist without nitrogen. In any case, my experiment on drones should be an inducement to bee-keepers to satisfy themselves, more than has hitherto been done, that their colonies are not in want of pollen at the commencement of winter.—*Translated from Gravenhorst's Illustrierte Bienenzeitung, December*, 1887.

Echoes from the Hives.

Honey Cott, Weston, Leamington, January 9th, 1888.—On the 13th and 14th of December a few stocks were having what I might term a partial flight, but the majority were quiet, with, perhaps, just a single bee or two going in and out; after this all were quiet till about the 29th and 30th, when the sun was shining quite warm during the middle of the day, and fetched out the bees from stocks that are in half-inch makeshift hives, but it has been reserved for the four last days of the week just passed for the bees to have grand flights every day, so much, that any one might almost say they were swarming. They look remarkably

clean and healthy. I have scattered some nice clean straw among the hives, which I believe has saved the lives of many bees, as it saved them from the damp ground.—JOHN WALTON.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of persona interest will be answered in this column.

C. WHITING.—*Uniting.*—Mareh will be soon enough to unite. Move the colonies near to each other, and feed both if necessary. When uniting remove the queen from one hive and place its combs alternately with those of the other, at the same time throwing in a little smoke. The evening is the best time for uniting.

H. SCHWARZ.—*Nuclei, Swarming, &c.*—Your proposed plan would not work well, since each hive would suffer from a cessation of breeding for at least fourteen days in the midst of the honey season. The usual plan of rearing queens in nuclei is far better; but if you object to the trouble, when the honey season is over—say about the end of July—remove the old queen from each hive, and allow the bees to raise another. The smallest nucleus we advise you to use is one containing three standard frames. To secure the queen in a swarm shake the swarm on to a sheet, and with a carbolised feather direct the bees to the entrance of an empty hive, raised slightly in front, preventing them from crowding in too hastily, when you will easily discover the queen as she leisurely marches in. This should be done in the evening.

W. H. JENKINS.—*Honey Leaflet.*—The B. B. K. A. have issued a leaflet entitled, 'Honey as Food,' which may be procured from the Secretary, Mr. J. Huckle, Kings Langley, Herts.

SHERBORNE.—*Holy Writ.*—The questions raised by you in your letter respecting the authenticity and inspiration of the Scriptures are beyond the limits of discussion allowable in the *Bee Journal*. If your letter appeared in our columns it would most probably give rise to a very wide, perhaps angry, and altogether useless controversy, which is much to be deprecated. Our views are dissimilar to yours, but to rebut your opinions would be going beyond our *crepida*.

R. CHAPMAN.—*The Best Frames.*—We should advise you to give frames of both the makers mentioned a fair trial, and report to us the result at the end of the season. Both the kinds of frames have special merits.

CHARLES WADE.—*Crooked Combs.*—When the weather will admit lift the frames, on to which the combs have been irregularly built, bodily out of the hive by means of two pieces of lath placed beneath the ends of the top-bars. Lay two pieces of tape on the transferring board, and lay the comb upon it. Straighten the combs by cutting down to the mid-rib and press it flat, the convex side will compress sufficiently; lay a frame round the comb, and tie it on tightly; keep the mid-rib in the centre of the top-bar, and be sure to keep the comb close up against the top-bar. Preserve all the brood, and keep it out of the hive but a short time. The drone-comb can be discarded. As each frame is finished return it to the bees in the hive. After two days examine the hive, and if the combs are firmly fixed, remove the tapes. If any have slipped tie them on again more firmly. The bees will repair all damages.

Business Directory.

HIVES AND OTHER APPLIANCES.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
APPLETON, H. M., 256A Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BURTT, E. J., Strond Road, Gloucester.
EDEY & SON, St. Neots.
HOWARD, J. H., Holme, Peterborough.
HUTCHINGS, A. F., St. Mary Cray, Kent.
MEADHAM, M., Huntington, Hereford.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.
WEBSTER, W. B., Wokingham.
WOODLEY, A. D., 26 Donnington Road, Reading.
WREN & SON, 139 High Street, Lowestoft.

HONEY MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BRITISH HONEY CO., Limited, 17 King William St., Strand.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BENTON, F., Laibach, Carniola, Austria.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
SIMMINS, S., Rottingdean, near Brighton.

METAL ENDS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
EDEY & SONS, St. Neots.
LYON, F., 94 Harleyford Road, London, S.E.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

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Editorial, Notices, &c.

'THE PITTS' APIARY, SOUTHALL.

We could scarcely have selected a more unpropitious time for visiting a bee-garden than a recent Saturday afternoon, and when we saw the locale of 'The Pitts' it was a double source of regret that a season of 'ethereal mildness, gentle spring,' was not chosen. Messrs. Abbott Brothers have hit it to a T (or, rather, two T's) in fixing upon the Old Gravel Pits as the groundwork of what they consider a *beau ideal* apiary should be.

In a snug excavation, many years old, now covered with rich vegetation growing rankly on its gravelly sides, and sheltered from strong winds, are seen bifurcating canals filled to their margins with fresh, green watercress (what magnificent drinking fountains for the bees!), whilst 'the pitts' are belted along the eastern side with willows what early pollen!), recalling visions of spring.

> 'Behold, yon bordering fence of sallow trees
> Is fraught with flowers, the flowers are fraught with bees.'

Tangled brambles, too, are there in plenty, so that there is food and drink, at least, at hand, eked out by whatsoever the bees can forage out in the adjoining meadows, for in the magnificent country between Hanwell and Southall, some ten miles from London, lies this bee-garden; indeed, there should surely be considerable surplus honey gathered in this locality.

We do not exaggerate when we say that there is no sight in these islands to equal, from a bee-keeper's point of view, the one before us this dismal, dark December day. Here are seventy new hives filled with new frames; the frames are filled with new comb, the combs 'all fraught with bees;' hives of white and hives of red alternate with others of blue, green, orange, and slate colour, these colours being so arranged with regard to each other that each one is in juxtaposition with others bearing the greatest contrast to it. The hives are arranged in what gardeners call 'quincunx' form, *i.e.*, straight lines are seen from whatever point one stands at, instead of a confused, disorderly medley. Messrs. Abbott Brothers' idea in establishing this bee-garden is that they may be able to supply at a moment's notice any reasonable number of perfect hives in thorough working order, their intention being to use wired foundation throughout, so that there may be no risk of breakdowns in transit; all that remains, therefore, for the purchaser to do on receipt of his hives, supposing the season be suitable, is to uncork the bees and put on sections. The hives at present in use are of the Gayton type, and very pretty they look. We shall be glad to revisit 'the pitts' on an insect hunt in due season, for by repute, and to all appearance, the place is a true home of rarities amongst the Lepidoptera.

USEFUL HINTS.

WEATHER.—A variation of 45°—from 15° to 60° Fahr.—in the course of a few days, maintains the character of our climate for fickleness. And now we have day after day of densest fog in most parts of the country. Saturday, the 7th inst., and the three following days, were days of brilliant sunshine, while the thermometer at mid-day in the open air stood at 60°.

CLEANSING FLIGHTS.—The bees were only too willing to take advantage of weather so unusual, and the apiary resounded with the pleasant hum of a bright day in June. After many weeks' confinement a thorough cleansing flight was obtained, and the health of the colonies thereby has been improved and assured for the future.

MANIPULATION.—So great was the inducement to examine several colonies, of whose condition we felt rather uncertain, that we took up our carbolised cloth, stripped off the quilts, and inspected the combs one by one, only to find that the bees were flourishing, and the hives dry, snug, and cosy, beneath enamelled cloth and other quilts. All were breeding, and the queens with distended abdomens, as in the summer months. Notably one colony, formed in the autumn from condemned bees, to which an imported Italian queen had been given, possessed four frames of sealed brood, together with eggs and larvæ. Such a proceeding, on the 7th of January, is without a parallel in our records of nearly half a century. The murmur of the bees, their flitting around in the sunshine, the feeble crawling over the brood combs of the newly hatched, and the short flights of others, for the first time trying their tiny wings, are things to be noted and remembered.

As quickly as possible the hives were closed, the quilts returned, and the hive-covers turned up towards the sun for an airing, and we trust that these colonies will be found none the worse for so untimely a disturbance when the honey season comes. *But* it behoves us all to remember that there is time enough yet for winter storms to reassert their rule. On January 18th, 1881, we experienced in this country a snowstorm of such violence that it might well be termed a hurricane, and to which our meteorological records contain no equal. So that it is

well to bear in mind the uncertainty of our climate, and not to 'cry before we are out of the wood.'

QUEEN-BREEDING.—It either is, or ought to be, the object of every bee-keeper to obtain the most hardy and prolific queens; indeed, there is no truer motto than that adopted by one of our principal firms of caterers in bee-appliances, viz., *Nihil sine Regina*. How many tons of honey have been lost by allowing effete and worn-out queens to remain over colonies until the honey season has passed away, and the bees have dwindled and died! There can be little doubt, too, that hives in such condition are meet receptacles for the germs of foul brood. That what is termed in-and-in breeding has a tendency towards depreciating the good qualities of queens—such as fecundity, longevity, energy, and so forth,—is generally admitted. But are we making any effort to procure the fecundation of our queens by drones of fresh blood? Certainly we are not if we allow fecundation in the same apiary in which the queens are bred, since in that case a young queen may, and probably will, mate with her own brother. It is true that our best strains of cattle, sheep, and pigs, have been raised by a constant succession of in-and-in breeding, but mating brother and sister, or parent and child, has always been avoided; and although the highest perfection as regards shape and development of particular point, has been reached in this way, yet it cannot be denied that fecundity has been impaired. Ask any farmer who has tried breeding pigs, for instance, from the higher class of pure bred prize-winning varieties, and he will tell you that their produce is very small in number. In our own experience the farrows have consisted of from three to five in the best and purest breeds, whilst these same breeds when crossed with entirely new blood have produced farrows of from ten to fifteen. And our belief is that the same rule applies equally in the case of bees. Hence the amount of benefit derived by English bee-keepers from the introduction of the Italian and other foreign races of bees into this country, can scarcely be estimated. The hybrids are acknowledged on all sides, both at home and abroad, to be the best bees, which at once proves our point; and our object in introducing the subject is to suggest a remedy for this in-and-in breeding, by which we mean the mating of queens in the same apiary in which they are bred.

There are various ways by which fresh blood can be introduced into our apiaries. Imported queens of the various races may be used, but the expense is considerable. English-bred queens of these races may be obtained from trustworthy breeders at home, but here there is some doubt as to the possibility of obtaining the pure race; in all cases, nevertheless, fresh blood will have been obtained. But there is another, and a very simple method, which we do not remember to have seen recommended in this country, viz., exchange of *virgin queens between apiarists living at a distance* of not less than eight miles from each other, or of sending such queens to a greater distance, solely for the purpose of fecundation. If it be an object to keep pure races only, we find greater difficulty, but even thus, by giving a little more time to the work, and by practising the Köhler plan, we can obtain our object under the exchange system. We will suppose, for illustration, two apiaries situated at a distance of ten or more miles from each other, one consisting entirely of black bees, and the other of Italians, in both a fair quantity of drones being tolerated. If the virgin queens are sent from each of these apiaries to the other, and introduced to nuclei, or to colonies which have just swarmed, in a few days they will have mated and can be returned to their owners. The worker progeny of such queens will be hybrid, but their drone offspring will be pure, and consequently there will be no danger of contamination to either race if the hybridised queens are not used for queen-breeding—always supposing that both apiaries are sufficiently isolated from other races. If only we could obtain the privilege of sending queens by post, a virgin queen, with a dozen attendant workers, could be forwarded, in a Peet or Benton cage, to a distant friend for fecundation, as easily as a letter is now transmitted, and returned in the course of a few days. That such a system would be largely and beneficially carried out, simply with the object of infusing fresh blood, independently of breeding the pure races, we have no manner of doubt. Or, again, supposing a breeder of queens for sale, who would, for a small consideration, receive virgin queens for fecundation by drones of any specified race, how great would be the convenience and advantage to most bee-keepers, and how great the saving of time and trouble! Without interfering with honey production—comb or extracted, with or without increase of colonies—by the above means we might annually introduce fresh blood into our apiaries, to any extent desired, and at little expense. The manner of proceeding we recommend is that stated in 'Useful Hints' (vol. xiv., p. 162, *B. B. J.*) under 'Preventing After-Swarms,' in which, when a natural swarm issues from a honey-storing colony, the swarm takes the position, and continues the surplus storage of the parent hive, the latter being placed beside the former for use as a nucleus (or otherwise) and for raising a queen. In this parent colony the queen may be allowed to hatch, in accordance with nature's law, and forthwith be transmitted for fecundation to some distant apiary, and afterwards returned to her hive. Or if the ordinary plan of natural swarming be allowed, the supernumerary queens—of which there are often from two to six with each swarm—may be secured from the after-swarms, and treated in a similar manner, for superseding old queens, or for any other purpose. A change of blood may be obtained also by purchasing virgin queens from the breeders, and introducing them into our own apiaries. For such lower prices should be charged than for fecundated ones. In artificial swarming, the plan may be carried out by giving a frame of brood to the colony during the absence of its queen. Under present postal regulations we have successfully carried out this plan, by sending by rail the virgin queens in the boxes from which we had taken imported Italian queens, but time occupied in transmission is more than it would be in remitting by post. May the Post-office authorities soon be induced, by our incessant importunities, if by no other means, to grant us the boon of sending our queens through the post. Young queens, weather permitting, will generally mate about the fifth day of their age; it it evident, therefore, that they should be despatched on these excursions as soon as possible after emerging from the cell.

HOT OR COLD?—We are indebted to Messrs. Carr and Raitt for complying with our request that they would give their views on the subject of 'Parallel *v.* Right-angled Frames.' Their pertinent remarks, given in the last issue of the *Record*, should be read by all who are interested (and who are not?) in this controversy. Their views, after a fair amount of experience, we can fully endorse, especially in regard to the advantages of tiering up over lateral extension, for either extracted or comb-honey, and free passage for the bees.

We still hope to have the experience of other practical apiarists on this subject, which appears, in our little world, to be assuming the position of the old controversy of 'Broad *v.* Narrow gauge,' in the railway world.

The truth of the old proverb, that 'habit becomes second nature,' will account for the variety of opinions as regards the use or difficulty of manipulation under either system. To ourselves manipulation is far easier and more pleasant with frames ranging from back to front than when placed transversely. Our rule is never to stand before the entrance to a hive when manipulating; but how to avoid doing so, in comfort, with transverse frames, we know not, since reaching over the whole

length of a fifteen or twenty-frame hive, well tenanted with angry bees, or even crossing the arms from side to side, is certainly not a pleasant operation.

With frames at right angles we always work from side to centre of hive, changing position from one side to the other, which causes the minimum of disturbance to the bees and facility in handling the frames. Mr. Godfrey's experience—that in roofs of houses, or other buildings, bees build their combs from rafter to rafter, or joist to joist—is exactly what we should have expected, even when such combs cross the entrance; but we do not think they do so in order to avoid draft—since in such situations this would simply be an impossibility—but to obtain a solid foundation for their combs.

But we are strongly of opinion that, given a hive, with perfectly horizontal base and roof, tenanted by a swarm large enough to fill, or nearly to fill it, with an entrance on the south side, we shall find that the bees will range their combs from back to front.

Section-racks.—We are often asked which is the best way to range the section-boxes on the hive—whether parallel, or transversely with the combs beneath. Our own plan is to place them transversely, but we do not think that it makes the slightest difference if placed the other way, if a full bee-space is left between brood-combs and sections. From a trial last season of Heddon's honey-board we are inclined to think favourably of it, and hope to give it a more extensive trial in the coming season.

Manipulation, Feeding, and other work.—Manipulation must only be tolerated in cases of dire necessity, such as dysentery, starvation, &c., when a change from wet to dry hive, in a warm room, or out-of-doors in a temperature of 60°, will prove of advantage. In such case moderate feeding with warm syrup will also do good, but otherwise candy should still be given. Keep all hives well and warmly covered, with dry quilts, winter packing, and sound roofs, and let there be no disturbance of any kind. Continue to prepare hives and sections in anticipation of the good time coming.

Foreign.

UNITED STATES.

The Annual Convention of North American Bee-keepers at Chicago.

(*Continued from p.* 18.)

Professor Cook gave a lecture on 'The Legs of the Bee,' which we hope to reproduce in full, together with illustrations, which the Professor has kindly offered to forward to us.

Mr. T. G. Newman introduced the question of 'The Best name for Extracted Honey.' Twenty-three names had been suggested, some of them very peculiar ones, such as 'Divorced Honey,' 'Cyclened Honey,' 'Loose Honey,' 'Honeyseim.' None of them appeared as good as 'Extracted,' and the meeting voted unanimously that no more appropriate name for 'Extracted Honey' can be selected than its present one.

Mr. J. H. Martin's essay on 'Cost of Production of Honey' was next read. He said, in computing the cost of production, the figures should show the cost for several years. He found the cost in his bee-yards has varied from 2 cents to 50 cents per pound. He values his bees at 5 dollars per colony. In 1886 he had 200 colonies, valued at 1000 dollars; empty combs, hives, fixtures, &c., 300 dollars; hired help, rent of apiary, &c., 72 dollars; his own labour, five months at 30 dollars a month, 150 dollars; total expenses, 300 dollars. He secured 10,000 pounds of honey at a cost of 3 cents per pound. In 1885 the cost was 2 cents per pound. In 1882 it was 50 cents per pound. This year the yield is 6000 pounds at 4 cents per pound. If comb honey is produced the bee-keeper prepares his own crates, sections, &c., three months more time should be added and 50 per cent should be added to the cost, making the cost of comb honey at least 10 cents per pound. He thinks an expert ought to manage 300 colonies in one yard, with little or no help.

The next was an essay by Mr. G. M. Doolittle on 'Honey Production—Its first cost, and how much the Bee-keeper should obtain for his Labour.' He considers a bee-keeper's time is worth more than that of the man who cuts wood, carries the hod, or breaks stones upon the highways, men whose working value is 1¼ dollars a-day. Bee-keeping requires study and brain-work which should be paid for. After carefully considering the position, he believes that 45 pounds of comb honey per colony is as a rule an average crop. Allowing that a man can manage 100 colonies of bees he will get 4500 pounds of comb honey as the result of a year's labour. This is not clear gain, there is interest on his 36 dollars, taxes, 4 dollars; sections, 25 dollars; foundation, 30 dollars; shipping, 40 dollars; double interest on 200 dollars invested in hives, which would be needed to keep them in repair; rent of shop and land, 30 dollars; carting honey to railroad, 11 dollars; making a cash outlay of 200 dollars a-year. Taking a hod-carrier's wages at 1¼ dollars a-day, or 391¼ dollars for 313 working days, and this added to the 200 dollars gives the actual cost at 591¼ dollars, or a trifle over 13 cents per pound. If one half more of extracted honey is obtained the cost is 8¾ cents as the cost of a pound of extracted honey. He says whoever sells for less than these figures works for less than 1¼ dollars a-day.

A paper on 'Price of Honey—how to control it' was read by M. M. Baldridge, in which he advocated the bee-keeper to fix the price and sell only to consumers. Honey in small sections should sell at 15 to 25 cents per pound. He proposes to sell to consumers through retail agents, supplying the growers with a can of honey and giving them a commission of 10 to 20 per cent, as they would have no cash invested in it. It should be constantly kept on sale and in sight every month of the year. The money may be collected every month, so that there would be little risk of bad debts. The distant markets should be supplied through agents, who would also receive a commission. In this way it would do away with the necessity of more than one wholesale supply house in each state.

On the question of statistics it was resolved that a committee of three be appointed by the President to use their influence in securing the placing of bees and honey upon the statistical list issued by the Government. Professor A. J. Cook and Dr. Mason were appointed.

Reports were then read from the Vice-Presidents from Ontario, Florida, Iowa, Pennsylvania, Georgia, Indiana, Vermont, and Quebec.

Mr. W. Z. Hutchinson then gave a short address on 'The Production of Comb Honey.' He said: To produce comb honey we must have populous colonies at the beginning of the honey harvest, and to secure these breeding must go on rapidly and uninterruptedly for two months previous to the honey harvest. Aside from food in abundance, *warmth* is one great requisite for breeding. The heat from a colony of bees is sufficient; the difficulty is that it is lost by radiation. To prevent this loss pack the colonies when taken from the cellars, and allow the packing to remain until time for putting on the supers. He packs by putting on an outer case and filling between with sawdust. Uses supers one tier high, the sections being filled with foundation. Although straighter combs are obtained by using separators, he can secure combs that are straight enough without them.

Mr. Heddon then took up the subject of 'Hives and Fixtures,' and at the request of several members gave a description of the construction and working of his hive, in which he said by reversing it the bees would

completely fill the frames with comb, while the screws holding the frames tight enabled the bee-keeper to shake out the bees. The break-joint principle of his honey-board prevented the building of brace combs.

Mr. Betsinger said he could shake bees from a Langstroth hive quite as quickly as they can be shaken from a Heddon hive.

Mr. Eugene Secor, in his essay on 'Bee-keeping alone, or with other pursuits,' advocated the combining something else with bee-keeping. He did not believe in specialists in bee-keeping any more than in hog-rearing. He believed that bees ought to form part of the surroundings of every ideal rural home; not only because it adds to the beauty of the landscape picture, but because, in the economy of nature, bees are necessary to the perfect fertilisation and fructification of the vegetable kingdom, and that object can be best attained by the proper distribution of the means to accomplish the end sought. If bee-keeping were in the hands only of specialists, some localities would be overstocked. The man who knows only one thing is a one-idea man. His capacity for enjoyments in this world is also limited. His horizon is narrow, bound by a single thought. It produces and developes a man to know more than one thing. All who have given the subject a thought know that the massing together of large numbers of either animals or men, soon developes disease and death—Nature's remedy for restoring the proper equilibrium of life. Who shall say that foul brood is not Nature's punishment for overstocking, and a gentle hint to more widely distribute the bees which she intended to act as marriage priest to all the plants in her flowery kingdom? In his judgment 100 colonies in one yard come very near the limit of profitable increase. Dairying or stock-raising could be combined with bee-keeping. In this case the increase of bee-pasturage will also increase his available food for stock and *vice versâ*. Raising fruits, such as strawberries, raspberries, and gooseberries, apples, and plums, are also recommended, as well as the keeping of poultry, either of which, combined with bee-keeping, could be managed successfully by an energetic and suitable person.

Mr. Heddon stood up for the specialist, and said that taking one year with another the advantages were all with specialty.

Mr. Root thought it better that the eggs should not all be in one basket, especially in a bad season.

Of the bee-keepers present, on the call of the President, twenty-five stood up as specialists.

Mr. R. L. Taylor next read a paper on 'Wintering Bees in the Northern States.' He attributed the heavy losses in wintering to allowing the bees to retain their honey, which was frequently unfit for them. When he winters out-of-doors he gives full hive-entrance and ventilating without draught. He gave several instances of bad wintering of bees traced to bad food, and recommends that all honey should be removed, and the bees fed up on syrup. In 1879 he had fifteen colonies, and fed each with sugar syrup. Wintered out-of-doors, and in the spring, one pint cup would have contained all the dead bees from all the colonies. He began the disastrous winter of 1880-81 with sixty colonies, thirty were fed with a limited amount of sugar, and of these sixteen survived; of the thirty not fed only three survived. In 1884 he gave all his 200 colonies empty combs and fed them on sugar. The result was that although all other bees in that part of Michigan, with but few exceptions, perished, there was not one of his in a normal condition; but, so far as he could judge, wintered perfectly. Next year his loss was 12 per cent, on stores partly honey and partly syrup. In 1886-87 he had 400 colonies, two-thirds had honey stores, the remainder were supplied with sugar syrup. There was a marked difference between the two, those on sugar stores were the picture of comfort and contentment, quiet, closely clustered, not easily disturbed, not a diarrhetic sign, and only now and then a dead bee dropping out of the cluster. Those on honey stores were uneasy, not closely clustered, easily disturbed, dying by the thousand, and many of the hives bearing unmistakable signs of disease. Colonies with plenty of good stores always winter well, while those with stores of a doubtful character winter more or less disastrously.

Mr. McLain then gave an interesting account of his practical accomplishments and experiments in scientific bee-keeping during the past year, referring to the interest displayed by the United States' Department of Agriculture in the valuable and rapidly increasing industry of bee-keeping and the honey product.

The last essay was by Mr. D. A. Jones on 'Establishing out apiaries.' He said there were some localities where 500 colonies might be kept, and others where 100 to 200 colonies would overstock them. He considered 100 to 200 as many as could be profitably kept in one apiary. Instead of increasing at home he would establish out apiaries, commencing with fifty colonies. One man is required at each place during the season of five months. He has himself located one from his home apiary one and a half miles north-west, the next four miles north-west, then one seven miles to the north-east; next one five miles north, one six miles north-west, and one ten miles north-west, with sometimes smaller ones between. From personal experience he considers that in good localities, from two to three miles is far enough apart. If the locality were suitable he would prefer to have them so that he could visit them all by driving the shortest possible distance. With a good practical foreman to visit the yards and see after them, as much can be realised from the out apiaries as from the home ones. Often they bring in a better return, because they are selected on account of their fitness, while the home apiary may only be tolerated because of its being your 'home' rather than the most favourable place for an apiary. Almost any number of apiaries may be managed in this way, if the owner is thoroughly practical, and will devote his entire attention to the business. He believes that all such apiaries should be managed both for honey and increase, unless the sale of bees is impossible.

It was decided to hold the next Convention at Toledo, with Dr. A. B. Mason as President.

KENT BEE-KEEPERS' ASSOCIATION.

The annual meeting of this Association was held, by the kind permission of the Royal Society for the Prevention of Cruelty to Animals at 105 Jermyn Street, London, on Thursday, the 12th January, at 5 o'clock in the afternoon.

The attendance of members was meagre in the extreme. Mr. J. M. Hooker, by unanimous consent, occupied the chair. The minutes of the previous meeting were read and confirmed. The Report of the Council for the past year touched upon the chief events occurring within that period, and adverted to the improved financial position as compared with previous years, the accounts showing the balance on the right side. The addition of forty-five new members had been made; on the other hand, sixty-five had withdrawn, removed, or allowed their connexion to lapse. The remarks upon the condition of the honey market were decidedly hopeful, and calculated to allay the anxiety which we have sometimes expressed. The season of 1887, like that of 1886, was not regarded as a favourable one for the county of Kent, the spring having been marked by too long-continued easterly winds. The Association held its annual exhibition at Ashford, and although its extent showed some decline, the classes appropriated to cottagers showed a marked advance in every way. Attention was drawn to the sparse attendance at the Council meetings which had been held, and

the hope expressed that by a careful selection of the localities in which the meetings might be held, an improvement would possibly result. A feature in the work of the Association during the year was the instituting of a competition for the best-managed cottage apiary, the result of which was so completely satisfactory that it will probably be adopted as a regular practice.

The usual recognition of the services of the officers and Council was observed, votes of thanks being accorded to them, as was also done to the Royal Society for the Prevention of Cruelty to Animals for the privilege of holding the meeting in their Board-room. The election of the Council, into which six new names were introduced, and the re-election of the Hon. Treasurer and Secretary, was performed. The choice of President for the ensuing year fell upon the Right Hon. Earl Stanhope, and the representatives to attend the Quarterly Conferences of the British Bee-keepers' Association were Mr. F. H. Cudd and Mr. Garratt, the Hon. Secretary of the Association.

The proceedings were brought to a conclusion by the drawing for three prize hives for cottagers, of whom there are ninety, resulting in the favour of Richard Wilmshurst of Kilndown, Goudhurst; Frederick Dean of Lamberhurst; and George Bowers of Betteshanger.

Cruel Punishment for Destroying or Interfering with Bees.—In the territory of Lauenburg and Bütow, which was ceded by Poland to the Elector of Brandenburg in the year 1657, and incorporated by him with Pomerania, bee-keeping at that time was carried on very extensively under the protection of an edict which dated from pre-Brandenburg times. This edict contained some very severe and even cruel punishments. Paragraph 16 states that 'any one who wilfully takes bees belonging to others, or unlawfully deprives them of their honey, shall be condemned to death on the gallows.' Bees at that time were kept in decayed trees in the forests. A still more severe punishment was exacted in the following paragraph, viz.: 'Whosoever destroys an entire colony of bees, no matter whether they belong to himself or to anybody else, shall be handed over to the public executioner, who shall take out his entrails and wind them round the tree in which the bees were wilfully destroyed, and shall afterwards hang him on the same tree.' Thus protection was afforded to bees by this paragraph even against their own masters. There are other offences mentioned in this edict that were also punishable by death, minor offences by fines or otherwise.—*Translated from the 'Gartenlaube'* xi. 1887.

Bees Stealing Honey.—A gentleman of this city who keeps bees, and has always been touched with their simple, hard-working, honest ways, has recently had that sentiment very severely tried. He had taken a large amount of honey from his hives, and put it into a small house in his yard that he provides for such storage. There were thirty-two pounds of it. He neglected to close the door, however, and the honey was left in the open boxes just as it came from the hives. Business called the amateur away for a couple of hours, and when he returned he went with pleasing anticipation for his honey. He found, however, that somebody had been there before him. Through the open door was to be seen a black mass, which seemed like all the bees in the State of Rhode Island, if not in the country. They were gathered about the honey, and were making the most of their time in carrying it off to spots more convenient for their own use. After entrance was gained, it was found that more than twenty-five pounds of honey had been abstracted within the two hours that he had been gone. The worst of it was that the honey had been diffused so generally by his bee neighbours. It would be interesting to know how the intelligence was spread so quickly for so great a distance.—*Detroit Free Press, January* 14, 1888.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

VIRGIN QUEENS—CONSANGUINITY.

[1428.] Many have been the disappointments experienced by, I may say, all bee-keepers in the British Isles at the almost insurmountable difficulties presented to them on their endeavouring to keep a certain variety or varieties of bees distinct. It is, without doubt, next to an impossibility to breed a certain race or perpetuate a certain strain of bees in these islands with a certainty of true mating. In what county of England can we go at the present time where it can be guaranteed that there are not colonies of bees within two or three miles of any position we like to take in that county? I venture to say there is not one. True, there may be a few isolated places where apiaries are few and sufficiently distant from each other that a desired cross may now and then be made between drones and queens of one's own apiary; but even in these isolated places, if strict search were made, stray colonies could be found, perhaps high up in the church steeple, or under the eaves of the roof of some house, or maybe in the hollow trunk of some patriarch of a neighbouring copse or hedgerow, where, owing to the vigilance and jealousy—they are very jealous of an outsider even looking in—of the gamekeeper, an *entrée* is exceedingly difficult to satisfy oneself that such a colony is existent or non-existent.

These views will be supported by many a disappointed apiarist who has given a long price for a queen of a certain variety only to find in the end that her progeny have become mongrel breeders—albeit mostly the best honey-gatherers—and in two seasons a pure bee of the variety introduced is not to be found in any of the hives, but nearly all the other colonies in the apiary have received a taint of the fresh blood introduced, the bee-keeper in the meantime can console himself with the reflection that he has provided all his neighbours for miles around with a, perhaps, advantageous cross to their stocks, or *vice versâ* according to the qualities of th bee introduced.

Where the Italian race has been introduced into a district—and where has it not, more or less?—the original black race has been improved. I hope in this matter I shall not bring down any very rabid controversialist upon me very strong—and, I may add, superlatively improved. I will not include districts above latitude 54°, as there I do not find so great an improvement in the bees by such an introduction: perhaps in course of time climatic influences will not have so marked an effect on them. This no doubt will account for so varied an opinion expressed by many as to the policy of introducing Italians to their apiaries.

I have been turning over a file of the *British Bee Journal* for 1886, and comparing the tabulated statements made by many bee-keepers who have introduced Italians into their apiaries. In by far the majority of cases the advantage gained is very marked: not that the superiority shows itself in so decided a manner with the pure Italians, but when the stocks have become hybridized the amount of honey gathered shows a most

important gain, especially in the first cross: my own experience of the superiority of such a cross I have frequently expressed before. The large returns per hive now obtained in comparison to those of a few years ago are in a great measure owing to the knowledge now in the possession of many apiarists as to the method of manipulating their stocks, and in taking advantage of every advantageous trait in the bee's character, and utilising it for their own profit. But we must not flatter ourselves that this is entirely the result of our own or others' practical knowledge; a great deal of this is the result of the introduction, not entirely of a fresh race, but the intermingling of fresh blood — a judicious crossing. In animals the advantage of so doing is very marked, and I think, although our little dependants are only insects, the same rule applies to them. Would a dairy farmer, in order to obtain a larger return of milk, keep a race of pure bred cows? He would, without doubt, choose cross-breds; in like manner no poultry keeper would expect a larger return of eggs from pedigree fowls, but would mate these with another variety—that is, introduce fresh blood to his yard. Such are the lines upon which all stock-keepers work who depend upon the produce from their stocks only.

We here see the advantage of having those among us who, through the peculiar situations occupied by their apiaries, are enabled to keep the different varieties distinct, breeding a true race, that they may in the course of trade spread abroad the advantages gained by the introduction of fresh blood to their customers' stocks. But in introducing this blood to our stocks the variety introduced must be taken cognizance of. It would not do for a dairyman to introduce, we will say for example, a wild Chillingham bull into his farmyard; if he did, deterioration instead of improvement would ensue. He must choose a variety which will correct the failings exhibited in his particular stock, that is, if a richer milk is required, his cows being deficient in that quality, although perhaps large producers, he must introduce a variety that are pre-eminently renowned for that richness, and perhaps a subsequent cross to correct any reverting to a loss of quantity that may take place in such cross that he may obtain both quantity and quality. We bee-keepers will be bound to work upon these same lines, gradually working out the shortcomings of our colonies by the introduction of correctives in the form of other varieties or strains.

It is becoming absolutely imperative that we obtain a maximum return from our colonies with a minimum of expense. Every advantage that can be gained by a low rate of expenditure is a point gained towards success; but such an expenditure must not be made simply because it is very small, as often the dearest turns out the cheapest in the end; the price must be governed by the results and the profits deduced from this.

In the above particular I note that the Americans have got just a little ahead of us by the trade that is springing up in virgin queens, and also the despatching virgin queens, in nuclei, for fertilisation to some distant apiary, which afterwards are returned to their owners mated.

We will first take the case of the trade in virgin queens. These, as all queen-breeders are aware, can be produced at a very low cost, as all the time, trouble, and anxiety of pure fertilisation is avoided; fresh blood can be introduced by these means at a minimum of cost.—W. B. Webster.

(*To be continued.*)

KOERBS' NEW ARTIFICIAL COMBS.

[1429.] It is with very considerable diffidence that, for the first time, I send you a communication, though I have long been a practical bee-keeper, and (I hope I may say without conceit) have experienced some gratifying successes. But upon carefully considering M. Koerbs' letter (1407) and the subsequent article upon the subject, I have a curious conviction that I have stumbled upon precisely the same principle in the construction of new combs. And though I do not for one moment desire to attract any reflected honour, and am not, just now, guessing Koerbs' principle and applying it to myself, still it is strange that the description of the advantages claimed (in 1407) are precisely similar and equally applicable to that of the combs I have been experimenting with lately. Unfortunately the honey-flow ceased rather too early last season for me to have arrived definitely at the fact that the queen would not breed in these combs and other *perfectly* reliable results, but the publication of M. Koerbs' perfected invention has hastened my action in a rather premature manner, for I had not intended applying for letters patent until I had proved without doubt the actual fact of the non-breeding of the queen in the new combs. Still, now that the subject is mooted there may be a possibility of some one '*stepping in*' before me without having arrived at any proof at all; hence my present action.

It is certainly rather unfortunate for me that I did not put my scheme into action earlier in the season, but the honey harvest came so abundantly upon us, all at once, that every moment was occupied in immediate requirement and work in the apiary, leaving no time for experimenting with queens. Still, I feel very confident from the vague descriptions we have to hand that M. Koerbs' invention must be very similar to my own, which is simplicity itself, and I wonder why and if it has never previously been thought of. The principles may, however, be entirely different.

I may say I should not have written this explanation at all, but I see in your last issue several correspondents are taking up the matter; and, in common with your correspondent Mr. W. Marshall (1423), I write in self-justification, and without in any degree laying claim to an invention which will revolutionise bee-keeping, but a simple matter which will, I confidently hope, be of practical utility, and also to show that others are keeping an open eye and to save some of the credit for all new ideas from going abroad, for it will be very useless to say *after* we all know M. Koerbs' process, '*Why! I thought of that long ago.*'

I may say, in conclusion, my principle is entirely confined to the production of honey and is not intended for use in the brood-nest.—W. G. Preece, Jun., *Local Hon. Secretary, Salop, B.S.*

THE NEW ARTIFICIAL COMB.

[1430.] *Re* Artificial Comb, as mentioned in last week's *B.B.J.*, I think, if it is tried, you will find if a comb foundation is made of cell bases a size larger than drone comb it will be similar to what our German friend wants 1*s.* 6*d.* from each bee-keeper for. I intend trying such a base this season.—W. Robinson.

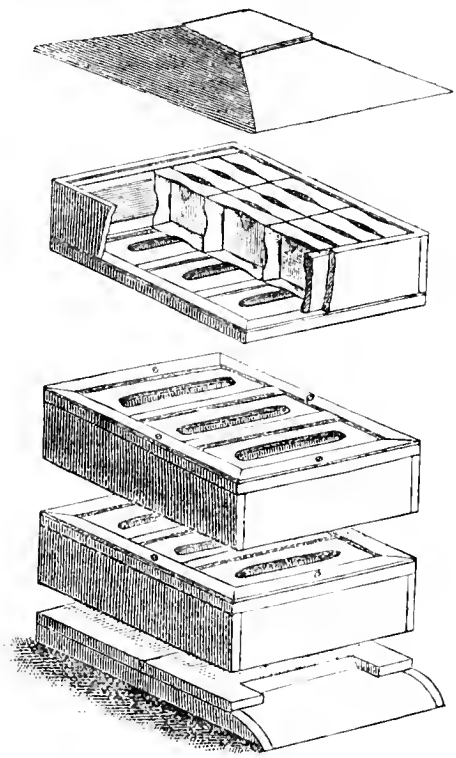
HIVES AND THEIR MANAGEMENT FOR COTTAGERS.

(*Continued from page* 20.)

'Cottager Champion.'

[1431.] This hive is designed for the use of the cottager who intends adopting bar-frame hives when he shall have had sufficient knowledge of the management of his bees to warrant him in turning to that more modern, more interesting, and more profitable method of bee-keeping. It is also recommended to those bee-keepers who may not feel inclined to adopt the bar-frame hive, but who prefer something more modern than a skep in which to keep bees on the fixed-comb principle.

Description.—The hive, in reality a section crate, consists simply of four walls with a reversible lid. The wood, after planing, should be $\frac{3}{4}$ in. thick. The inside dimensions are $14\frac{1}{2} \times 14\frac{1}{2}$ in., and the outside 16 in. The sides are $4\frac{1}{2}$ in. deep. The lid is 16 in. square, and clamped to prevent warping. Upon this lid, on one side only, a rim 2 in. wide and $\frac{1}{4}$ in. thick, is nailed round, leaving a recess in the centre 12 in. square. Two pieces of wood, $\frac{1}{4}$ in. thick and $\frac{7}{8}$ in., full, wide (latter face



downwards), are nailed along the grain of the wood $3\frac{3}{8}$ in. from the opposite inner sides of the rim. These afford rests for the centre row of sections and the bottom corners of the outer rows, and they make three spaces or recesses $3\frac{3}{8}$ in. wide and 12 in. long. In these recesses running parallel with the section rests are holes through the lid $\frac{3}{8}$ in. wide and 12 in. long. There are two of these holes in each recess $\frac{7}{8}$ in. from each side, so that when a piece of excluder zinc $12 \times 3\frac{3}{8}$ in. be dropped in, it just fits, and the bees have access from below through two rows of holes in each recess to the super above whether for sections or fixed combs. (Only one hole in each recess is shown in the illustration.) The lid is secured to the body of the hive by four screws, one in the centre of each side. As I set my hives perfectly level both ways, and always recommend that plan, provision in this hive is made for guides. (Skeps are an exception to this rule on account of the difficulty of fixing guides.) The under side of the lid is marked with ten saw-cuts across the grain of the wood, which will be across the holes as guides for the fixing of narrow or deep pieces of foundation. The bottom two in the illustration are fixed as described above, while the top one is shown with the lid reversed, and in use as a section-crate. When used as a section-crate it will be noted, from the dimensions given, that there is a space between the ends of the outer rows of sections and the inner side walls. This is filled with blocks, which slide in. On one side, as shown in the illustration, there is a $\frac{1}{4}$ in. recess, permitting bees to pass round the ends of the sections. If this facility be not preferred, by reversing the block a plain side is turned to the ends of the sections. The roof recommended is a plain 'Simmins.'

Floor-board.—The floor-board is 16 in. square, nailed on side pieces projecting 4 in., and that much rounded. A piece $1\frac{1}{2}$ in. deep and 12 in. long is cut out of the front of the floor-board. Under this, and between the projecting parts of the side pieces, is nailed a piece of thick wood which has also been rounded to correspond with the ends of the side pieces, and to throw off the rain. A rim $\frac{1}{4}$ in. thick and 2 in. wide is nailed on the sides and back of the floor-board (not shown in illustration), this allowing of inverting if the bee-keeper wishes to practise it.

Management.—Having chosen the site and provided a stand as already recommended, preparations should be made for a swarm. Three bodies, floor-board, and roof should be provided, and they should be well painted, not only the sides but the edges. The swarm should be allowed to cluster in a skep, and it may be then, or in the evening, brought near to the stand prepared for it. Now place the floor-board on the ground in front of the stand and upon it a body prepared with starters of foundation, and with sheets of excluder zinc in the recesses on the lid. Upon this place a super, which may be prepared with sections, or with guides of foundation exactly like the first. The upper body—super—should now be covered carefully with cloth and the roof placed upon it.

The swarm should then be thrown on the ground in front of the entrance, and the bees urged in by smoke or a feather dipped in carbolic acid. When the bulk of the bees have entered the whole arrangement may be lifted into position and the top of the super tested with the spirit-level, to be sure that it is perfectly level both ways. A good swarm will not be provided with sufficient accommodation in the lower body, which I will term the brood-chamber, and therefore a good proportion will go into the upper body, the super, while the queen, full of eggs, will be kept by the excluder below.

When the bees are thus forced into the super, storing, if necessary conditions are favourable, commences at once, and continues so rapidly that more room will soon be needed. (The progress of the work is seen through a circular window in one side.) The extra super room, if it is decided to give it, should be a similar super placed between the one already on and the brood-chamber. If, however, one super is all that can be expected or is cared for, instead of giving more super room above the brood-nest a body should be prepared with wide starters and placed under the brood-chamber. When two supers are used this is how the first taken off should be served when emptied.

In either case the swarm will then have a partly filled super and two body boxes for brood-chamber, and it should be the bee-keepers' endeavour to get these two bodies filled with combs and have a strong stock well supplied with food by, say October 1st, when a farewell should be taken of them as far as interference is concerned until early in February, when on a very fine day a slight examination to see how the food is holding out may be made. A thorough examination should be made on a really warm day on or as near as possible to March 1st.

When brood-rearing has progressed satisfactorily it will be a great advantage to change the positions of the boxes; that is, the upper box may be put on the floor-board and the lower one upon it. This operation would, as a rule, take place in this district, where we are surrounded with orchards, early in April, if not earlier.

When supering, if the two bodies have been so managed as to contain little but brood and bees by the commencement of the honey flow, excluders between the brood-chamber—now consisting of two bodies—and the super are not necessary.

There are many ways in which a stock in these two boxes may be manipulated to the advantage of the bee-keeper. For instance, if from neglect to give sufficient super room there is a quantity of honey stored in the upper section of the brood-chamber, it may be inverted and placed on the floor-board, that the honey may be taken from it to the super (of course in inverting the combs must be kept in a perpendicular position). When the honey has been removed from the inverted chamber it should be restored to its previous position, but remain on the floor-board.

Again, when the time for supering has arrived the bees may be driven from the body containing the least brood to the other, and then having placed upon that single body excluders a sectional or other super would be taken to at once. One caution is necessary when the stock is thus treated, the bees will be cramped for want of room in a few days by the rapid storing in the super and the increase of the population, and it will be probably advisable to place a body of starters only on the floor-board before giving a second super, or swarming may take place, but for sectional work the bees should be crowded as much as possible without causing swarming. —C. N. WHITE.

FRUIT CULTURE AND APICULTURE.

[1432.] Speaking superficially we are decidedly in favour of the two going together. We can testify to the unalloyed pleasure experienced when labouring amid some hundreds of pyramid fruit trees. And it was our daily and irresistible pleasure too, last summer, to leave awhile the hoe, and lie or sit opposite the hives. The experience was so charmingly new to us.

The bees were ever visiting the profusion of thorn, cherry, plum, apple, pear, and raspberry blossom. The great advantage of being always near the bees cannot well be over-estimated. Especially is this so during the swarming season. But there appears to be one drawback, viz., wasps; and it would be a considerable gain to some of us if any effectual means were known of preventing or destroying these very troublesome and annoying insects.

The summer before last, when we had no bees, wasps were not so troublesome, nor half so numerous, as they were last summer. Wherever bees were kept there were the robber wasps, and the pickle bottles with sugar and water as counter-attractions. The latter, however, seem to entrap as many bees as wasps.

But last summer the wasps were not only exceedingly annoying to the bees, but the fruit of every apple, pear, and plum tree was attacked and seriously damaged. So general was the destruction that we had to gather all the fruit ere it was ripe, or lose it altogether. Not a single pair was left to ripen.

We frequently found three or four wasps inside an apple or pear. And, of course, when the fruit was all gathered the wasps attacked in greater force the bees.

We were glad, however, to find that our bees were quite equal in fighting capacity to the wasps. We had the opportunity of watching scores of combats, and it was very seldom that the bees lost their lives in battle. Generally they would fight and fly again. After, when we lifted the roofs off hives, the severed bodies of wasps lay scattered about the quilt, and just as often the bees seized the opportunity of lugging their victims off the premises. And yet how daring and cunning is the wasp, how she watches her opportunity to enter the hive, and, though often repulsed, at last succeeds. We object to this wholesale depredation, and shall be very grateful for any information of means of prevention. I suppose we must follow the wasp line till we reach their nest, and there put an end to them.

On the 7th, 8th, and 9th, our bees were much on the wing. The weather was remarkably mild and bright between the morning and evening mists. Many of the bees returned home after sundown, which to us was rather a surprise. To many the pleasure was very brief. On the morning of the 10th, scores of them hung with the grip of death upon wood and stone, white with the prevailing fog.—F. GOODRICH, *Methwold, Norfolk, Jan. 14th.*

FOUL BROOD.

[1433.] Foul brood is not a thing of yesterday, and was in existence in Ireland long before the introduction of the bar-frame hive or Ligurian bee. Of late years bees have been going to the bad in the old skep, and died out in many places, due in part to the sulphur-pit, and the survival of the unfittest which was kept as a stock; but in many cases, also, to the foul brood. On making inquiries of many as to the condition of the hives on the death of the stocks, they had plenty of honey, and the wonder was, why they had died. I saw combs thrown out of hives that had foul brood most decidedly, though I did not know it then; but know it too well now, having got it from a skep apiary of several hives that died right out of the same. Being hardly a mile from this, my bees brought it home through robbing the deserted hives. An error of mine may act as a warning to others. I extracted and fed back the phenolated honey to infected hives (had then but two), gave it driven lots in autumn, and fed it to others besides, with the result of sowing the disease broadcast, so that out of thirty-five hives I had but two clean the following spring. Through doubling up weak and dwindling stocks, and then treating all infected hives as swarms, placing a new clean queen at the head of each I got a good many into a healthy state again; boiled down old combs and burned the frames. If the queen is infected no cure can be made until she is superseded, for though the phenolised syrup may be freely used the source of the disease is there still, for though you may cure it in one part of the hive it will break out in another. Many would advocate stamping it out by destroying the whole lot. That to my mind is very wasteful, as with care, and a good deal of trouble, you can get them clean again; and if a good season get a little honey too, with carefully disinfected hives, but with new frames and quilts I do not think there is much danger of an outbreak in the same hive again. I have them in use, and the stocks are now well.

Camphor I found of no use against foul brood.

To show how widespread this disease is, and how little is known about it in Ireland in its southern counties, I was made a present of a skep some time since from a place where foul brood was said to be unknown, and it was simply rotten with it. Died out in one month.

A diseased stock may be cured by treating it as a swarm in May if you have a young and clean queen to put at the head of it; place in a clean or thoroughly disinfected hive, and feed with phenolated syrup while comb-building, and I would consider a cure assured. Some may differ, and if a better way is shown no one will be better pleased than yours, truly,—JOHN J. SMYTH.

COUNTY BEE-KEEPERS' ASSOCIATIONS.

[1434.] In your article on page 2 of this year's *B.J.*, under this heading, there are still some remarks that I think should not pass without notice.

It will not be conceded that the County Associations have already accomplished the work for which they were formed, and I am glad to see that Mr. McClure (the energetic Hon. Secretary of the Lancashire and Cheshire Association) takes exception to this statement in a very able manner in his letter [1419]. He naturally is surprised to find such gloomy and discouraging remarks in an editorial of the *B.B.J.* I may say that although this is the recognised organ of the B.B.K.A., the Committee are in no way responsible for the article in question, and

do not in the least share the desponding feelings of the writer. Considerable progress has been made by some of the county Associations, the quantity and quality of the honey exhibited, the number and keenness of the competitors, the able management of the exhibitions, the questions asked by visitors anxious to commence bee-keeping, and the general interest taken, all tend to show this. Still, much remains to be done.

I have, during the last season, had many opportunities of noticing all this at the exhibitions where I have attended to act as one of the judges, and I think the B.B.K.A. has much reason to be satisfied with the efforts being made and the success achieved in most counties. Depend upon it that where there is this decline and want of interest there is something wanting in the organization and management.

One Association not having fulfilled the conditions of affiliation, is not acknowledged by the B.B.K.A. No general meetings have been held, no Committee of Management has been appointed, and no report and balance-sheet have been issued for several years. Under these circumstances it would not be matter of surprise if such an Association was on the '*decline*.' This state of things exists in one of the best honey-producing counties in England, where there are some of our most enthusiastic and successful bee-keepers living. They are ready to support and subscribe handsomely if an Association can be properly organized and affiliated to the British. Surely some effort will be made before another season to place this Association upon a proper footing.

There are other Associations in which parts of counties only have been properly worked, and this must be the case in large counties unless they are subdivided into districts, each having its district Secretary and its local adviser, who should hold a third-class certificate at least, working with and under the county Hon. Secretary. By this division of labour the work would be easier, and, at the same time, thoroughly done, and all bee-keepers could be reached. Where the counties are thus subdivided, the number of members would be increased, the entries at shows more numerous, the different districts vying with each other in friendly rivalry for the credit of a particular part of the county. The district Secretary should arrange for periodical meetings for the friendly discussion of all matters connected with bee-keeping, lectures, and local exhibitions. Prizes should be offered to cottagers for the best-managed apiary in each district much in the same way that Horticultural Societies give prizes for the best-managed garden.

A county subdivided in this way can be more economically worked, the travelling expenses of the expert will be saved, and the advice given at the time it is wanted, which is not the case where there is only one expert for a whole county.

Several counties have not yet started Associations. In some instances members are ready to be enrolled, and are only waiting to find honorary secretaries among the clergy or persons well known and respected who have time, and who will volunteer their services, and throw some energy into the work of formation. The Secretary of the B.B.K.A. will be very glad to give advice and assistance in this work.

The county Associations were formed with the object of assisting the British in spreading the knowledge of the humane and scientific method of bee-keeping, of teaching the agricultural and other labourers how they could occupy their leisure time in an interesting and profitable manner, and so improve their condition. Surely you, Mr. Editor, do not admit that even in the most prosperous county Associations 'the work for which they were formed has in a great degree been accomplished,' and that there is not much more to be done before any appreciable number of cottage bee-keepers are taught that they can keep bees in such a way, in their leisure hours, that they may pay their rent out of the profits derived from bee-keeping?—JOHN M. HOOKER, 76 *Tyrwhitt Road, St. John's, S.E.*

[The object of the institution of the British Bee-keepers' Association cannot be said to be accomplished until the great object to which the late Rev. H. R. Peel devoted himself with so much earnestness—viz., that an Association should be established in every county of England and Wales—is effected. That gentleman took the trouble to publish in the columns of the *Bee Journal* a map with the counties marked dark and light—the dark indicating where no Associations were formed, and the light where they were. A reference to this map will at once show how matters have progressed, or retrogressed, since his time. Many that were then light should now have to be made dark, and a few the reverse. A great advance has been effected by the division of counties into provinces, and the provinces again being subdivided into districts. But toiling secretaries (see in a recent number Mr. C. N. White's reasons for his resignation of the Hon. Secretaryship of the Hants B.K.A.) have sad reminiscences of the *vis inertiæ* of bee-keepers yet to be overcome before the desire of Mr. Peel can be realised.—ED.]

COUNTY ASSOCIATIONS.

[1435.] Mr. W. M. Graham (1118) is probably not far wrong in thinking that County Associations have 'one and all promised too much and done too little.' I have been connected with two Associations, of both of which this was certainly true; and I quite agree with our Editor in thinking that the time has now arrived when 'the internal working of the Associations and their individual condition may be a useful and timely inquiry.'

I trust that the matter will be freely and fully discussed in the *Journal* and at the quarterly meetings of the Central Association, and that some of the County Organizations will thus be induced to reform their modes of procedure. Like all other public bodies we must learn from experience, modify our rules and action accordingly, and move with the times. There is still much good work to be done. There is ample room for more lectures in winter, as well as shows in summer; but both the lectures and the shows should be 'up to the times.'

Then, again, certificated experts could still do important work in most counties, and every intelligent amateur who has a little spare time could become an apostle of advanced bee-keeping. The fact is, many of the older bee-keepers have fallen out of the ranks or lost their enthusiasm, and the time has come for rousing up and re-organizing the younger men.

Bee-keeping is now such an important industry that it is well worth while to take this matter seriously in hand, and to try to put our local machinery in gear again. In the part of the country where I recently lived, we never did so well as when there was a metropolitan show, which was something to look forward to and prepare for, as well as a rallying point for our best workers, who brought back from it a stock of knowledge and a fund of enthusiasm that helped most materially to keep things moving in our shire. Then we had our own local shows, lectures, and experts; now we have neither. At our shows honey producers sold their surplus stock, and local hive-makers booked their orders: they could still do so, I feel convinced, if things were properly managed. The practical lessons conveyed during the manipulations were invaluable, because they carried conviction to the minds of the sceptical, and taught those who could not or would not read. But deaths, removals, and changes of circumstances, thinned the old ranks; depression of trade and agriculture reduced the subscriptions, and a little want of discretion in management put the finishing touch

to what was at one time a flourishing association—the result being debt and temporary despair. There is hope yet, however; and a time of revival is, I trust, at hand. It will help us in re-organising, and others also probably, if bee-keeping friends will tell us candidly, during this discussion, the secrets of success and the causes of failure.—AN OLD BEE-KEEPER.

THE PRICE OF HONEY.

[1436.] On page 27, 'Sherborne,' lamenting the low price of honey, is allowed to take occasion to have a fling at the clergy. As far as I can understand his meaning from the construction of his sentences (and I am in doubt between 'I' and 'the uneducated public' whether I am not one of the latter), he attributes the 'mischief' in part to 'men with their regular salary, and clergymen to a large extent . . . , going in for fruit, vegetables, bees, and photography.'

Now, clergymen have not a 'salary' in the ordinary acceptation of the term, but an income given to them originally by those who had it to give; and it is not regular in one sense, viz., that it does not maintain its level, but is on, what 'Sherborne' calls, a 'down-grade,' to an extent which he is evidently unaware of, and which, if he understood or believed it, I am inclined to think would not distress him. From a pecuniary point of view—if one is not too nice as to the use of the words 'salary,' 'business,' and suchlike—very likely the information he gives us as to the superior importance of chimney-sweeping is quite correct. It seems to be attributed to 'Sherborne' that he does not 'read carefully,' &c. Has he observed the many names of clergymen on the list of the committee of B.B.K.A.? and does he think that one of the objects of these gentlemen is to lower the price of his tenpenny sections? Would he be surprised to hear (I expect he would) that the interest of many a clergyman who keeps bees is quite the other way through diminution of salary? and will he give others credit for having for years, with the secretary and perhaps his assistant, done *nearly the whole* of the work of their County Associations, till they feel bitterly the wrong of such a 'foul' blow, as that which 'Sherborne' has delivered, and clergymen to a large extent?

I see, sir, that you have had to sit on this same individual anent 'Holy Writ.' Whether or not he used the word 'holy' I am unaware, but one is astounded that he should have attempted to introduce such a subject to your columns, and one feels more than it is well to say; so I will only add that if you had but 'deled' that unhappy expression you would not have been troubled with these lines by—CLERICUS.

IMPRESSED FOUNDATION.

[1437.] I see in *B. B. J.* Messrs. Neighbour have invented an impressed foundation. I have made foundation for some time with thread or twine embedded, also thin strips of wood — which foundation is *unbreakable* — also foundation on paper base. The idea of embedding other material than wire is mine.—GEO. STOTHARD, *Welwyn, January* 13.

FOUNDATION *v.* WORKED COMBS.

[1438.] Instead of replying to my query, as to his experience of tiering clean combs, Mr. Saddler asks a question and refers me to the practice of another correspondent; this may be a reply, but is scarcely an answer. Further, I did not write concerning the replies to Query No. 2, but to Mr. Saddler's strictures thereon — which I am glad to hear were not meant to be uncourteous.

By the method advised of extending the brood-nest by the insertion of foundation, at least three examinations are necessary in place of one where a comb would be used in which food could also be supplied in its most available form; further, to work out the foundation an additional strain would be imposed on the colony (and therefore an increase of food) whose every effort might otherwise be employed in raising brood at this critical time, which may be in April or May, according to the latitude of the stock, or the forwardness or the reverse of the season. It is further advised that the frame of foundation be placed in centre of brood-nest, when, should a cold snap occur, the bees and brood will be divided by a comparatively cold wall of wax and air-space on each side, which if they fill, other portions of the brood must be consequently depopulated. Now had a frame (with stores) warmed to the temperature of the hive been placed on the outside of the brood-nest, the colony would be comfortable in any weather and could be left safely until it was practicable to divide the brood-nest by additional combs.

An easy and safe method of storing combs is to fill the body of a hive that will 'tier up' with frames, give the bottom board a strong dressing of carbolic acid, double on another hive body — *de novo* — until the ceiling is reached if your combs hold out. Place on cover, close up the single bottom entrance, and all is secure from mice, moth, and foul brood; at least, that is our experience in dealing annually with about three hundred combs, if packed in Edey's doubler. — JOHN EDEY, *St. Neot's.*

CHILIAN HONEY—SUCCESSFUL WINTERING.

[1439.] A few weeks back you referred to the import of Chilian honey. It occurred to me that my father, having at one time imported the article, could give some account of the use made of this honey, and I wrote him accordingly. In reply he says, 'The Chilian honey of which I formerly got consignments was mostly sold in Liverpool through a broker. The few parcels that came to London were given to my drug-brokers, who took samples and submitted them to the wholesale confectioners. The latter relied upon their being given impartially by the brokers, and made offers which were submitted to me. I afterwards received a contract of sale.

'Or the brokers advertised the honey for sale by public auction, when they exhibited samples at their offices for intending buyers to examine. Chilian, Californian, and Cuban honey comes generally to Liverpool, has every appearance of rough handling and of wanting a great deal of civilisation yet. It is not likely that any methods exist in those countries by which you could learn anything. These outlandish honeys are at present (after the season) unsaleable, and only worth 25*s.* per cwt., whereas British honeys might still be sold at 60*s.* The principal season is two months before Christmas, and the principal buyers are the wholesale confectioners and cake-manufacturers. They absorb the whole import, the difference in price between British and Chilian being so great. The rough quality of the latter is quite sufficient for the common cakes. These articles are generally sold for cash in fourteen days and usually through a broker, who acts as an impartial middle man.'

With regard to successful wintering, I am of opinion that the size of the hive is of little consequence in the matter; the main point being that there is only *one* opening to the hive. I don't know if any one has ever tried having the entrance at top of the hive, but probably even in such a case the bees would winter well enough.

The great danger is to have ventilation as usually understood, viz., in at one hole below out at another above. With a quilt of double or treble felt, or thick chaff cushion, there is, of course, no ventilation to speak of, any more than there is through our plaster ceilings.

Gases do find their way out, but by no means as fast as generated, and when a stock is packed for the winter with propolised top covering their abode may be practically considered as air-tight above. Anyway they will do their best to make it so, and no one has ever given an instance in which his bees have left a hole above unpropolised for ventilation.

My bees enter below the floor-board through a 9-inch opening ⅜-inch wide. The alighting-board is underneath also, and is always dry. No rain can blow in, and robbers have no chance of entering and a poor one of even alighting. It is known that a roof by itself placed above plants will keep off frost, for the reason that the colder air is always descending, I suppose. Thus the floor-board keeps the frost from the entrance in my hives, being a roof to the alighting board. Though I consider this plan much better than having a direct opening in the side of the hive, I am unable to say yet if there is any marked effect, advantageously or otherwise, on the colonies. The only decided point noticed so far in comparing the two plans are: on frosty days there is distinct buzzing at each floor entrance, none at the side entrances. Looking in at the top I find the colonies with floor opening down low, some bees on the floor-board at times, the others close up against quilt.

The bees with side entrance come out in great numbers on warm days, the others only sparingly. I may also state that the driven bees put on empty combs reared brood to end of November over the floor-holes, and there is no sign of mortality so far. I shall be pleased to report further if the matter is of any interest. My winter packing is ticking, two felts, wood in pieces, and, as extra precaution against frost, four straw bottle covers. The latter are cut loose at the top and make a neat covering, and can easily, if wanted, be strung together as a mat. The two felts are laid together, and then, with a round tin canister having one or two notches filed in the edge, two neat circular bits of felt are cut out of the middle of the quilts. These are stitched together and a loop of string attached, over the quilt-hole, fits the hole in the centre bit of wood, which is covered in feeding time with gauze. By removing a straw bundle and pulling up the felt bung one can get a hasty glimpse of the condition of the nest.—SILKE.

SAFE ARRIVAL OF TWO STOCKS OF ITALIAN BEES IN INDIA.

[1440.] Mr. A. G. Nicholson, Hawthorne Estate, Yercaud Sheraroy Hills, Madras Presidency, India, writing to Messrs. Geo. Neighbour & Sons in December last, acknowledging the receipt of two stocks of Italian bees, says: 'You will be glad to hear that both stocks you sent me have arrived at their destination in perfect condition, in spite of many bees having died, but then we had terrible storms to start with and very hot weather. I was greatly surprised to find both hives full of brood, and in one the queen actually continued depositing eggs whilst I held the frame of comb in my hand. I am, as you may imagine, greatly pleased with the success so far, but they are having a trying time just now, for we have been having days of pouring rain and Scotch mist ever since their arrival, and the time for flowers will not begin before April next.'

These two stocks of Italian bees were sent on November the 4th, by order of the Indian Government, in the steamship *Pekin*, and I shall endeavour to prevail on Mr. Nicholson to let me know their future condition, so that I may report the same to this *Journal*.—ALFRED NEIGHBOUR, *London*.

WHAT INDUCED ME TO KEEP BEES.

[1441.] 'Will you accept of a hive of bees?' I must confess that I have a very great weakness in always trying to please: as the questioner was a lady I said, 'With pleasure.' So in due time I received—'none of your new-fangled notions about bar-hives, observatory-hives'—a skep with a strong lot of bees; but this was an extraordinary hive, an old skep which I presume had been used in a case of emergency. It was a very crazy sort of thing, very rustic; one skep on the top of another, and a large bell-glass on the top with a cosy over. I don't believe that ever a tom-tit would approach within a few yards. Talk of strong stocks, there was almost a swarm in the bell-glass.

I have given a minute description because I wish to refer to it again, and see what lesson we may learn from it. I got a covered stand and put the skep on facing south. My neighbours and friends called out in passing, 'I see you are going to keep bees.'

Just to digress for a moment.—A minister once overheard a conversation which was carried on so that he might hear,—this occurred on the platform,—'Do you know the reverend gentleman?' 'Only that he once kept a shoe-shop.' The reverend gentleman was called upon to speak, and he said that he had heard that he once kept a shoe-shop, 'I can assure you, Mr. Chairman, I never did keep a shoe-shop, but that the shoe-shop kept me.'

Within a few days a lady brought me a *Parish Magazine*. She said, 'Here is something that may be of service to you, as there is an article about bees.' I was very glad, because I knew nothing whatever about bees, only that they stung and gave honey; my wife appeared to know a great deal, as her father kept bees for many years. I soon found out that he belonged to the old school—honey and brimstone. I found the article, and something like a parson with a veil on; the article was about quieting bees, my wife's father knew all about that.

I read it more than once, then I got excited and wished to know more about the dear bees. Now I must go in for a bar-frame hive. I sent for one, and all fitted up with foundation, &c. I got a letter from the Station Master that it had arrived. I shall never forget the misery I was in at this time; a day or two before the arrival of the hive a lady friend called and told me that the bar-frame hives would not answer. Her brother had had several, but the bees all died in them; and that his place was much better than mine as it was high and dry. My dear half gave me no rest: 'Oh! send the hive back, and get the man to allow you something,' and suchlike. I still had a besetting sin in that line of bees keeping me, or at least that they would pay their way. Well, I painted the hive a nice green colour, and was careful to leave the opening same size as the skep. I had to do nothing now but wait until my bees swarmed.

Coming from church one Sunday morning I met a man who worked for the lady that gave me the hive; he had his shirt-sleeves rolled up. I said, 'Whatever are you going to do, and on a Sunday?' he said he had been sent for to go and hive a swarm of bees. What a chance for me, only that it was Sunday! That besetting sin again got the mastery, and I went to arrange to have them. I had not to ask twice. Two men brought them, a skep full as full could be of bees; it happened that two hives had swarmed at the same time, both on the same bough about three feet from each other, and the men put them all in, or tried to do so. Here was uniting. I was quite ready for them when two men brought them. I had got a platform in front of the hive, and covered with a white table-cloth. The men said, 'There they are.' I said, 'I want you to throw the skep down, and then take it up.' 'No fear; you do it yourself,' said one of the men. He added, 'You nor no other man will ever get them into a thing like that; how can you expect it?' My master once tried it, but he soon tired of it.' I had no other alternative than to commence without help. The man undid the cover, and then I bumped them on to the platform, about half of the bees fell out. I was

very glad I did not get stung. 'Now then, look; just as I told you,' chimed in one of the men; 'they will never go into such a thing as that.' The bees ran here and there. I was glad it was getting rather dark because they did not fly. I could see the bees clustering in front of hive up to the very top. Just then my wife called me in to supper. She said, 'How long will you be in getting the bees into the hive, as it is getting very cold?' I said, 'You had better go to bed.' 'Ah!' she said, 'you told me they would all be in in the course of half an hour.' When I got to the hive most of the bees had found their way back into the skep. I had to commence again. This time I got a brick and placed it in the centre of the white table-cloth, and I soon bumped them out; they hissed just like an egg in a frying-pan.

Necessity is the mother of invention. I had no smoker, so I got all the brown paper I could, and a box of matches. The paper smoked away very nicely, and I kept getting them in: about half of them were in when it struck three o'clock. I was very cold and chilly. I then and there promised that if ever I again got another swarm I would have a smoker. About six o'clock I heard a door open, and then a voice twitting me, 'Why, have you not got them in yet?' Then my wife came to look at the bees, and then she looked at me. Oh, what a lecture I got on bee-keeping! Her father never had any of those foolish things; just nice, comfortable skeps, and at the end of the season used a very small piece of brimstone and took the honey and got 1s. per pound. How humiliated I was! My wife said, 'Just look, they come out as fast as they go in.' At eight o'clock I gave it up for a bad job. Friends came to see my success; alas! they saw thousands of bees clustering outside. I was very like Job: you may be sure they gave me a lot of comfort. I wrote to a friend stating that I had put the bees on six frames according to directions. I got a reply, and what a relief!—'Give them all the frames.' Oh, how happy I felt! It was only the work of a few moments to remove dummy, and then to my relief they scampered in; but it was strong work on account of the narrow doorway; still, a great many refused to go to work, just basked in the sunshine. I wrote again. Reply came, 'Put sections on.' I was very thankful for this piece of advice; it was worth 6s. 8d. You may be sure I put them on within twenty minutes. There was not a bee outside—I mean basking in the sun; there they were in the sections looking through the glass. Next day I could see honey. I felt like Columbus now, repaid for all the worry and trouble. And there was a great change in my appearance, especially my head: if Barnum had been about I would not have been safe in nine days. I took twenty-two pounds of honey from the hive; if I had known then what I do now I could have had fifty pounds. My friends came again this time; they said, 'Who would have thought it?' others, 'I could not have believed it!' I shall never forget when I took the honey into the house. My wife opened her eyes and looked at the honey, not at me, and said, 'Well, well,' and ran for some dishes.

I wrote to friend Huckle, and I soon got a wrinkle or two from *Modern Bee-keeping* and Mr. Cowan's book. By the time I had read these books I really had got bee-keeping on the brain. I found that I had done all things which I ought not to have done and left undone the things which I ought to have done.

(*To be continued.*)

HONEY AND MELLA.

Has the taste for honey died out in this country, or has it been benumbed by the atrocious imitations and adulterations with which, in a time of scarcity, the market has been flooded? It is doubtful which, for the introduction of sugar and the subsequent removal of the sugar tax has decidedly told its tale upon the demand, honey being used where sugar is now for domestic use or confection. The tax upon mead and metheglin, our rare old ancestral honey beverages, stopped their manufacture in a great measure, and with the consequent decrease in the demand followed the decrease in the supply, until the reaction went, as all reactions do, too far, and then the supply of real honey became deficient, insufficient even for the reduced demand; consequently fictitious manufactures, that a bee had never known, found a sale as the genuine thing, and the taste for real honey died out.

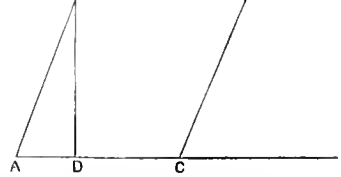
Now there is another tide of reaction setting in, and a demand for real honey is greatly on the increase. Medical men prescribe it as a health-giving diet for children, and especially invalids, or others; and beverage-makers, in their quest for 'something new,' are inclined to go back to 'something old,' and take up the honey drinks again. All this means a renewed supply, and that of the genuine article only, wherefore there seems to be a wide field for the cultivator and collector. Great Britain can supply many thousand times more honey than it does, and ladies would find bee-keeping a very lucrative home employment, and a very pleasant and interesting occupation.

The British Honey Company Limited (17 King William Street, Strand; depôt: Columbia Market, Shoreditch) have sent us some samples which are truly delicious, and should be found on every breakfast or tea-table where cheap and nasty jams are now too often to be found.

The same Company manufactures an effervescing, non-intoxicating drink which they call 'Mella.' It is rather too sweet for ordinary drinking, but it is by no means insipid, and the honey is there in full flavour.

The adulterations of honey to increase bulk and profit are perhaps more numerous than samples of fictitious honey, and they are as bad and injurious as any can be. Without going into the methods of their detection, it must suffice in this article to enumerate those more generally met with, and not a trace of one of them can be detected in the honey sold by the British Honey Company. Amongst them starch, potato, wheat, and cane-sugar, are the least injurious; chalk, hydrated sulphate of lime, and pipeclay taking a very bad position, and being very commonly found. The starch is not only added for the sake of creating weight and bulk, but to 'improve' the colour of dark honey, and to correct an acidulous taste which old honey sometimes acquires. No doubt the chalk, &c., are used for the same purpose. The wax is often simulated with the aid of hard mutton suet and starch.—*The British Journal of Catering, December.*

GEOMETRICAL CONSTRUCTION OF THE CELL OF THE HONEY-BEE.—In the *Proceedings of the Royal Society* Professor H. Hennessey describes the geometrical construction of the cell of the honey-bee, and gives a figure



and method by means of which the lozenges comprising the cell can be obtained. On a straight line take a part A D, and mark off D C=2 A D. From D draw a line at right angles to A C, and with a radius A C=3 A D cut off D P. Draw a line from A to P, then A P and A C will form the sides of the lozenge A C E P. From this the two remaining lozenges and the six trapeziums can

be obtained. The triangular pyramid which terminates the bee's cell may be inscribed in a sphere whose diameter is three times the size of one of the edges of the pyramid.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of persona interest will be answered in this column.

H. Wright.—1. *Lee's Frames.*—You will be able to procure Lee's frames from Messrs. Neighbour; but we believe the machine for making them is not quite perfected. When the frames are ready will be announced in our advertisement columns. 2. *First Swarm.*—In the case of a first swarm, it is the old queen that leaves with the swarm.—3. *Camphor.*—Bees do not object to camphor. 4. *Excluder Zinc.*—It is not necessary to use excluder zinc under sections. The bees object to it. Allow not less than one-fourth of an inch, and not more than three-eighths between rack and frame.

S. J. S.—Mr. James Lee's address is 43 Glycena Road, Lavender Hill, London, S.W.

H. C. Schwerz.—1. *French Works on Bees.*—*Elevage des Abeilles* by M. Georges de Layens. *Les Abeilles* by V. Rendu. *Les Abeilles* by Maurice Girard. 2. *Italian Works on Bees.*—*L'Ape e il suo Governo*, by Dott. A. Dubini. *L'Ape Italiana*, by F. de Jorio. *Manuale: Apicultura in Italia*, by Cav. L. Sartori and Cav. A. de Rauschenfels. These may be procured through Messrs. Dulau, Foreign Booksellers, Soho Square, London.

C. M. R.—1. *Old Bees.*—It is most probable that your bees were old and queenless, and consequently died out. 2. *Condemned Bees.*—For treatment of condemned bees, consult Vol. XV., pp. 329, 341.

Welsh Novice.—1. *Utilising Slag Heap.*—Try borage, mignonette, wallflowers, or stocks. You give no idea whether there is any soil at all among the slag. 2. *Feeding Stocks short of food during January.*—Flour candy, pushed quietly below the quilt, is the only food permissible.

A. Nicholls.—1. *Preventing Loss of Swarms from Skeps.*—If you increase the size of your hives by adding ekes below and supers above, you may safely leave them from week to week. 2. If your bees require feeding, give them candy or barley sugar.

W. Chester.—The honey in the unfinished sections should be extracted when convenient, and given to the bees to lick out. They may for this purpose be placed behind the dividers, on the lower edge of which an entrance must be made to give access to them. Then wrap them up warm and dry, so that they may be ready on the arrival of the honey-glut.

E. A. Gibbon.—It is not easy to say what caused the bees to desert the hive; but the hive having been deserted, the inmates of the neighbouring hives found it impossible to resist the temptation of plundering. This temptation passed from one hive to another till the whole apiary became demoralised. Robbing is generally accompanied with fighting.

Sherborne.—*Holy Writ.*—Your letter received, with thanks. We must respectfully, but firmly, decline its insertion.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Appleton, H. M., 256a Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Burtt, E. J., Stroud Road, Gloucester.
Edey & Son, St. Neots.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Webster, W. B., Binfield, Berks.
Woodley, A. D., 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
British Honey Co., Limited, 17 King William St., Strand.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Benton, F., Laibach, Carniola, Austria.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Simmins, S., Rottingdean, near Brighton.

METAL ENDS.

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Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Edey & Sons, St. Neots.
Lyon, F., 94 Harleyford Road, London, S.E.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
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Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.

HONEY GLASS MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Blow, T. B., Welwyn, Herts.
Pearson, F., Stockton Heath, Warrington.

NOTICE.

The *British Bee Journal* is published by Kent & Co., 23 Paternoster Row, and may be obtained of all local Booksellers, and of the following Agents:—

ABBOTT, BROS., Southall, London, and Dublin.
ANDREU, F. C., Port Mahon, Minorca.
APPLETON, H. M., 256a Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Stanley Road, Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BROWN, C., Bewdley, Worcestershire.
DURRANT & Co., Booksellers, High St., Chelmsford
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HOLE, J. R. W., Tarrington, Ledbury, Herefordshire.
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REDSHAW, C., Canal St., South Wigston, Leicester.
RICE, J. J., Wensum Street, Norwich.
RUDKIN, F., Belton, Uppingham.
SMITH & SON, 186 Strand, London; and at all Railway Bookstalls.
WITHINSHAW, A., Newcastle, Staffordshire.
WOODLEY, A. D., 26 Donnington Road, Reading.
WREN, L., 139 High Street, Lowestoft.

THE HONEY-PRODUCING INDUSTRY.

THIS department of Bee-keeping has attained such important dimensions, that Honey in its various forms is now recognised as a staple article of commerce. There is hardly a Grocer or other dealer in the large towns of the country, who is not becoming aware of the value of the same as a medium of profit; and it is now common for the Wholesale Dealer to come to the large Apiary and make his purchases, just as he would buy any other commodity; and notwithstanding, small Bee-keepers sometimes complain they cannot sell. The fault is mainly their own, in holding out for a high price on a quantity too small for the dealer to trouble with. The large holder, on the other hand, being well known, and having greater facilities, disposes of his entire crop to one party, often before it is removed from the hives. Consequently the demand has exceeded the supply, and an unlimited field is open for the profitable investment of capital in developing this industry, when under efficient management.

Relying upon these facts gleaned from personal experience, as well as that of other large holders, the present proprietor of the Great Sussex Apiaries is making arrangements to develope his entire business into a Limited Liability Company, for the purpose of very largely extending the honey-producing department.

The district is entirely free from any possibility of interference from the dark honey produced in some localities by aphidean pests. At one of the apiaries, very favourably situated in a hollow at the junction of several fertile valleys, many acres have already been sown for the benefit of the bees with honey-producing plants; while many acres more can be sown in like manner at little expense.

It is also intended to make mutual arrangements with neighbouring land-owners for the same purpose; as also to rent land for the double object of producing *both* honey and hay from the same crop. Other apiaries will be established from time to time in suitable locations, so that nothing will be wanting to make this the most complete and extensive business of the kind in either Europe or America.

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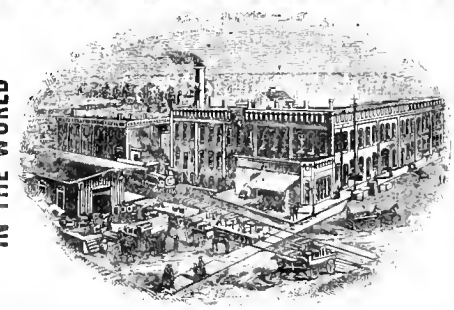

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THE
BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

A COTTAGER'S BEE JOURNAL.

It must be apparent to all who have noted the successive changes which have taken place in the issue of the *British Bee Journal*, —from monthly to fortnightly, from fortnightly to weekly, from its price at sixpence to that of twopence per number, the constant aim of the respective proprietors to produce a journal which should be the full exponent of the developments of a progressive industry, and the faithful reflection of all those improvements which are constantly being brought before the public in the various appliances which tend to the more perfect and profitable management of the Honey Bee, and which should be able to give sufficient reports of the meetings of the County Associations.

But we have ofttimes been much exercised in our minds whether our *Journal*, in its present form and at its present price, has reached the hands of those for whose benefit the British Bee-keepers' and the County Associations were more particularly instituted, viz., the Cottagers and the Agricultural labouring classes. Again, in the annual reports of the various County Associations mention has constantly been made of the trouble and difficulty experienced by the Secretaries in regulating the circulation of the *Journal*; and great has been the trial of their patience at the absence of regularity in forwarding the *Journal* from one member to another. We also have in some measure been dissatisfied with ourselves, and have felt that the object of our mission was not accomplished till the *Journal* was published at such a price as should render it accessible to bee-keepers of every class and grade. The difficulty which we have felt we have had to contend with has been how to produce a journal containing the information appertaining to an industry which is ever extending its borders, the exposition of the constant novelties in appliances, the communication of the increasing knowledge of the physiology and habits of the honey-bee, and the reports of the various Associations, and at the same time to bring the teachings of the *Journal* to the homes and hearths of the cottager and artisan. To perform with satisfaction these *desiderata*, it has been suggested to us by many friends and members of County Associations to retain the *Bee Journal* in its present fulness and form, and concurrently to issue monthly a summary of the useful and practical portions of the *Journal* at a price which should bring it within the means of the humblest bee-keeper. This suggestion we have much pleasure in adopting, with the hope that it will be for the 'encouragement, improvement, and advancement of bee-culture in the United Kingdom, and for the bettering the condition of cottagers' and others; and also that it will be the means of relieving in some degree the hard-worked Secretaries of County Associations of the anxiety they have felt with regard to the circulation of the *Journal*, and of giving facilities whereby the various Associations could send out notices of meetings and other information to their members at more frequent intervals than can now be arranged, and with less trouble than now devolves upon the Secretaries.

We purpose, then, on or about the 1st of March, to issue a Cottager's *Bee Journal*, which will contain those portions of the weekly *Journal* which are most general and serviceable. The price will be 1*s.* 6*d.* a-year, or three-halfpence per number, 2*s.* post-free. At this price we hope to give sixteen crown quarto pages—nearly equal to the size of the *Bee Journal*. We purpose to make special arrangements with the Secretaries of County Associations.

The price we have every reason to believe will come within the means of those whom we most desire to reach, who will thus be able to have their own paper, at the beginning of every month, without the trouble of having it passed from member to member. This will be found to be the cheapest printed bee paper, —cheaper even than those published in America. We trust that the secretaries of the various County Associations, who will find this mode of publication a great assistance to them in their work, will give us their heartiest assistance in making this 'new departure' a success; and for this purpose we might suggest that the *Journal* in its new form should be given to every cottager as an inducement to become a member of the Association. We shall be pleased to receive any practical suggestions which will enable us more readily and completely to meet the requirements of the Cottager.

It will be a great source of pleasure if by this endeavour we as journalists are enabled more

effectually to fulfil the object of the existence of the *Journal;* and we feel we may confidently depend upon the assistance of those who have in time past supported us, so that a fresh impetus may be given to the cause we all have at heart.

HUNTS BEE-KEEPERS' ASSOCIATION.

We very much regret to hear that the Hunts Bee-keepers' Association are about to lose the services of their Secretary, Mr. C. N. White, of Somersham. For five years Mr. White has been most assiduous in the performance of his duties. In his capacity of expert he has visited every portion of the county, and given lectures on bee-keeping to the cottagers and villagers; and he has spent more than one vacation in tours through various districts with the object of spreading a knowledge of the management of bees. The demands on his time have now become too great, and he is obliged to resign the post, the duties of which he has so efficiently performed. It is sad to think that a gentleman, so enthusiastic and capable, is obliged to retire from the scene of his labours, baffled and disappointed. Could not the services of Mr. White be still retained? Could not the county be divided into provinces, and the provinces into districts, giving Mr. White the superintendence thereof? We trust that some such arrangement will be effected, and not allow Mr. White to fall back into the ranks.

ASSOCIATIONS.

BRITISH BEE-KEEPERS' ASSOCIATION.

Meeting of the Committee held at 105 Jermyn Street, on Wednesday, January 18th; present, the Hon. and Rev. H. Bligh (in the chair), the Rev. Geo. Raynor, Captain Bush, Captain Campbell, the Rev. Dr. Bartrum, the Rev. F. S. Sclater, the Rev. J. L. Seager, J. M. Hooker, H. Jonas, W. O'B. Glennie (Treasurer), and the Secretary. The minutes of the last meeting having been read and confirmed, the Secretary presented the statement of accounts for the past year. After some consideration, it was resolved that the same be adopted and printed as usual. Attention was called to the fact that whilst the Association had fully maintained its position in all other branches of its work, the income from subscriptions had decreased.

The advisability of the Committee altering their day of meeting was considered, and the Secretary was instructed to write to each member of the Committee requesting him to name the most suitable day, or days, of Monday, Tuesday, or Thursday, for him to attend with the view of fixing the meetings in future so as to enable the majority to attend.

The consideration of the Committee's Report and the business of the General Meeting occupied the remainder of the meeting, which was followed by the usual Quarterly Conference with the County Representatives. There were present, Mrs. Curry and Mr. W. B. Webster, Berks; F. Cudd, Kent; Rev. W. E. Burkitt, Wilts; W. Lees McClure, Lancashire and Cheshire; W. M. Graham, Middlesex.

The representatives reported that two subjects had been considered at their preliminary meeting:—

(1.) The advisability of some modification being made in the existing arrangements for the third-class examination of candidates for certificates in practical work.

(2). The desirability of some facilities being given to the County Associations whereby the *Bee Journal* might be more largely used by them, and further whether there was any probability of the price being reduced to one penny.

In regard to the latter point the Committee pointed out that they had no power in the matter, but they had no doubt but that those who conducted the *Journal* would do their best for the Counties.

The former recommendation was discussed at some length, the majority being of opinion that the present system was not too severe so far as the requirements of the knowledge of the work, but that the system might be much more simplified. The Committee promised to give the matter their best consideration, and in the meantime they would be glad if the representatives present, and others, would send their suggestions on the subject in writing to the Secretary.

The first Quarterly Conversazione of the new year was held at 6 p.m. Among the ladies and gentlemen present were the Hon. and Rev. Henry and Mrs. Bligh, Mr. Hooker, Mr. Glennie, Mr. Lyon, Mr. Grimshaw, Captain Campbell, the Rev. G. Raynor, Mr. Webster, Mr. Leigh, Mr. Baldwin, Mr. Haviland, Mr. McClure, Mr. Wm. Graham, Mr. Henderson, and others.

The Chairman (Mr. Glennie), in opening the proceedings, said he would not detain the meeting by any preliminary remarks, but as Mr. Grimshaw had kindly undertaken to read a paper he would at once call on that gentleman to give them the benefit of his ideas, which could not fail to be entertaining and instructive.

Mr. Grimshaw said that he had entitled the subject of his address 'Specialisation,' and he begged that the meeting would favour him by freely discussing and criticising the opinions he was about to lay before it.

SPECIALISATION.

It seems strange that it now becomes a question, debatable *pro* and *con*, I admit, but still an open question, whether it is advisable at this stage in bee-keeping knowledge to centralise our studies, our experiments, and our energies, into given grooves and channels in order that our science may continue to develop with the same giant-like rapidity which has distinguished it during the recent past.

There are rivers of thought which widen and deepen their channels by the aid of the numerous streamlets whose contents they are constantly absorbing. There are also other watercourses which spread themselves out over barren stretches of almost profitless waste, which divide, and again subdivide, their flow until, if travellers tell us truly, their floods become so absorbed amongst the sandy and muddy detritus or residuum that they are entirely wasted.

What applies to one science may apply to another, and if it be found requisite for students in other sciences to *specialise* their energies after reaching some common given point, it is necessary for the bee-keeper also to well consider the matter, whether he can add to our present store of knowledge, and advance the science, without this specialisation. Like the veins on a leaf, or the ribs on a bee's wing, bee-keeping has divided itself and ramificated into so many channels that we are beginning to feel the necessity for specialists and authorities who have made particular branches distinct and undivided studies, and whose word becomes a dictum. As we stand at present, we see in Great Britain, Canada, America, and Europe, many brilliant lights amongst bee-keepers, whose opinions differ as we read them, week by week, in the columns of nearly every journal, so that one feels constrained, when asked for advice, to recommend the novice to subscribe to but a single journal, and follow its teaching alone; and there sometimes exists a little feeling of delicacy in suggesting even this course.

Clever doctors are quite at variance with each other as to the treatment their patients require, and though we cannot but warmly thank them for their best prescriptions, gratuitous and at great trouble, we have but to look into that *facetiæ* column, the part of our journals devoted to 'the selected query,' and glance at the answers, to see the necessity for specialisation. The distinctly conflicting nature of the advice in some places, given by men of light and leading for the guidance of the subscribers to the periodicals, is symptomatic of the want of specialisation; the confusion of their readers is a development of this, and the tyro in bee-keeping becomes discouraged and disgusted with the whole thing. The queries are sent out to well-known bee-keepers, they answer according to their individual predilections, but it requires an expert in the business to sift out the real truth, and best proceeding out of the matter of their replies. Often there is direct variance amongst the replies, and then the reader's difficulty is at its height, for, amidst it all, he feels how much they are trying to do for him, and how grateful he must be, and is, for their efforts.

The directions which efforts towards specialisation should take are almost self-evident. On the subject of foul brood and dysentery, there is room for years of study, and by getting periodical information from those who are devoting attention to this branch (of this kind of information by the way we have the exceedingly interesting translations of Pastor Schönfield's articles on brood-food), the bee-keeper, by means of his journal, would get to know exactly what to do, and when to do it, in both the prevention and cure of this disease. Queen-raising and mating affords another deeply interesting route for investigation and experiment; we may thus learn from specialists the disadvantages of permitting any black drones in our own apiaries, and also the combinations of varieties required to produce the best all-round bee, the bee of the future; one which shall work early and late, swarm little, winter well, give clear white cappings, and withal, 'keep its temper,' thus giving us another reason for looking to it, as we are told to go to the ant.

Another special study well worthy the attention of the highest intellects amongst bee-keepers of to-day, as it has engaged the minds of many in the past, is the botanical aspect of bee-keeping, the practical part of this being, of course, what, when, and where to plant forage, with its respective values as cattle-fodder. The *rationale* of the hive, the why and wherefore of the best systems of hanging frames, wintering, obtaining the best sections, or combs for extracting, these are, both theoretically and practically, advantageous lines of research; but particularly interesting would be a study of the different kinds of honey, with their respective worths as food, their various flavours, and medical properties. For the specialist in bee anatomy and physiology there is the widest and most delightful field for observation and thought in such enchanting vistas of light, as the voice, sight, hearing, smell, taste, memory, instinct or reason of the bee, its homing power, the uses of the different limbs, wings, head, antennæ, jaws, eyes, and what not; for, depend upon it, there is much more to learn yet about all these than we already know.

Specialisation I hold to be the future watchword of those who aspire to become advanced bee-keepers. When I say advanced bee-keepers, I do not wish to class them with cynical scoffers, whose claim to be advanced is merely a question of the calendar. We know of Mr. Webster's discovery in borderland, the advanced apiarian who 'ken'd mair aboot bees than onybody,' and some of us can perhaps call to mind others of the same class, who sneer at science till it offers them some gem for the mere trouble of picking up, just as some despise the physician's science until they are seized with illness, or others who despise religion until they hear 'the old Reaper' sharpening his scythe. Let not the specialist in bee-keeping be dismayed or disheartened by sceptical scorn, but let him take heart of grace from the knowledge that the mocker himself uses hives and appliances, and also follows the instruction of the scientific bee-keeper of the past, just as in the future he will follow those of to-day.

I am prepared to admit that the honey farmer, pure and simple, must generalise to some extent, and take only a digest of the information provided for him in the bee-literature of the day; this, coupled with his own experience, may perhaps keep him in a line with other honey-farmers, but as a thorough student of bee-physiology, the bee-keeper cannot long continue to cull the sweets from *various* flowers, from various chalices of study, the nectar-tubes become too deep for good to be drawn from all, and he will be forced eventually to take a lesson from the worker-bee herself, concentrating his attention on one exclusive source for a given time, if he intend to gather or diffuse any appreciable amount of intellectual nectar, and he will find he cannot keep pace with the latest information and most recent discoveries, and still be able to contribute to the sum of knowledge already possessed, unless he select one particular branch of apiculture, devoting to this the whole of the time and energy he has hitherto given to the entire subject.

If we do not specialise our work, we shall, I believe, drift to one side like logs, or become mere milestones, marking the advances made by others, who, wiser than we, selected one science, and then again one branch of that science, wherewith to develop and recreate the mind. By-and-bye, as one broad route is travelled and explored it becomes crowded with fellow-workers, the forward movement is again arrested, unless they decentralise and diverge along what seem at present only dark, tortuous alleys; but these open and expand the further they are explored until specialisation again becomes necessary. It is so with the chemist, the surgeon, the physician; in law, in art, in music; and also in our varied trades and manufactures. Finally, it is so in the home of industry, the hive itself. If excellence is to be maintained and continued, subdivision of effort, in other words specialisation, has to be resorted to. In my mind, it is not now a question of whether specialisation be necessary or not (it goes without saying), but whether the time has arrived when we must resort to it; and this, as far as regards bee-keeping, I hope to hear discussed—discussed I hope to advantage.

The Chairman congratulated Mr. Grimshaw on his very able paper. The subjects touched upon were no doubt open to a great amount of consideration and interchange of thought and opinion amongst bee-keepers, and he hoped that members who could throw any light thereon would kindly express their views, and thus assist in the elucidation of many mysteries in connexion with bee-keeping. Mr. Grimshaw had referred to some points upon which investigations were already being made by specialists, who had been good enough to lecture at the meetings of the Association from time to time; for instance, Mr. Cheshire had discoursed ably on foul brood. The subjects of wintering bees and honey as food had also been dealt with in the same way.

The Rev. G. Raynor thought they would all agree on the advantages of specialisation. It was impossible to arrive at anything like perfection in the different branches of the science of apiculture without specialising. It was well known that a 'Jack-of-all-trades' never excelled in any particular line. He was not surprised that experimenters had arrived at different conclusions. Such results were always occurring, no matter what the subjects were. In regard to bee-keeping, there was plenty of room for difference of opinion. As a cure for foul brood some people used salicylic acid, whilst others preferred camphor, and various other remedies. His experiences showed that the cheapest and safest cure was to destroy

the diseased stocks and their appliances. His apiary had never suffered from it, but he had seen a good deal of it in the apiaries of others, who had lost more than they gained by attempting to cure the evil with specifics. As to queen-raising, the great obstacle to breeding any race pure was the difficulty in making the queen pure. That could be insured by specialists, but in an apiary conducted on general principles it was troublesome to manage, and required a thorough knowledge of the subject. The greatest advantages accrued from the introduction of fresh blood into an apiary. They were well aware that in the breeding of cattle the diffusion of fresh blood was considered all important—the same applied to bees. Until the foreign races of bees were brought to England they had been breeding in-and-in for many centuries, which had resulted in a loss of vigour; and if that system had been continued, they would never have been able to take 200 lbs. per colony, as was the custom in the present stage of bee cultivation. He advocated the transmission of virgin queens a distance of at least ten miles from the apiary in which they were bred, where they should be introduced in a strange apiary in order to be mated with fresh blood, and then returned to the original home. By this means vigorous stocks would be ensured. He heartily thanked Mr. Grimshaw for his interesting paper.

Mr. Baldwin dissented somewhat from Mr. Raynor's view as to the desirability of killing the bees to destroy foul brood. Mr. Cheshire had thoroughly investigated the subject and shown beyond doubt that, if properly treated, however bad the disease may be, it was possible to thoroughly cure it. Perhaps, however, Mr. Raynor's advice was the best in the case of unskilled persons. He thought the object and aim of introducing new blood would be best served if bee-keepers would exchange young fertile queens. The capping of sections was a most important matter, and he would be pleased to see the bee that could give good white capping, thick enough to prevent the sections from 'weeping,' but not too thick to displease judges. The bee that he had found to give the best capping was a cross between the Ligurian and black bee, or a cross between the Carniolan and black bee. Carniolan capping was exceedingly thin, and not suitable for sending distances, low temperature or dampness causing it to 'weep.'

Mr. Lyon said a few words in regard to the modes of transmitting bees from place to place, which subject was discussed at great length by the Chairman, Messrs. Baldwin, Graham, Webster, Raynor, Sambels, Hooker, Haviland, Lyon, and Grimshaw.

Mr. Webster was strongly of Mr. Raynor's opinion as to the necessity of destroying hives containing foul-brood. In cases where the bee-keeper thoroughly understood the disease the circumstances were different and a cure might reasonably be attempted.

Mr. Sambels was of the same opinion as Mr. Raynor with reference to the stamping out of foul-brood by total destruction of the stocks. That was the best advice to inexperienced people. If he (the speaker) had large apiaries he should do his utmost by means of the doctoring system rather than condemn a number of hives to the sulphur pit. His bees had never been troubled with the disease, but he had had experience of it in the apiaries of neighbours.

Mr. Hooker considered that no bees were so good as the old English bees for sealing honey-comb. Crosses were no doubt more vigorous and produced more honey, but for satisfactorily sealing comb black bees were the best.

Mr. Haviland said with regard to Mr. Raynor's remarks, that few bee-keepers had time to attend specially to the breeding of bees, which involved the expenditure of considerable time and money. The first cross was generally considered very vigorous, but breeding from the crosses produced speedy degeneration.

Mr. Sambels approved of the frequent importation of fresh blood. Instead of breeding crosses he thought it better to keep to one breed, but obtain fresh blood. That principle applied well to fowls and other animals.

Mr. Grimshaw differed from Mr. Haviland somewhat. In-and-in breeding no doubt caused an inferiority of race. The first cross was no better than either of the original ancestors, but this should be crossed with a bee whose good points it was desirable to secure, and by so crossing and inter-crossing with bees possessed of specially good qualities the result would be what he would call the bee of the future—containing a maximum of good with a minimum of bad points. Some races had extra long tongues, some wintered more successfully, whilst others gave better cappings. His object in writing the paper on 'Specialisation' was to cause bee-keepers to think on the subject, and decide for themselves what particular line they would take in specialising their studies. Generalisation did not forward the science of apiculture at all.

Mr. Graham said a gentleman whom he knew, and who had made a special study of breeding, advocated that a start should be made with a black bee as the original queen, introducing yellow blood by means of Carniolans or Italians. That product might be allowed to last for three years, after which fresh blood should be introduced according to circumstances. If vigour should be found wanting introduce the black species; if the stocks were not prolific or not good honey-gatherers yellow blood was required.

Mr. Baldwin was afraid a great deal of mischief was done by what were known as condemned bees. He believed that many stocks given up to be driven contained foul-brood. He had found straw hives so diseased that he had refused to take them, and it would be impossible for him to say that he had never unconsciously driven from hives containing the disease. Generally cottagers would insist on the combs being left in the hives, and in such cases persons of the greatest experience would have a difficulty in recognising foul-brood.

The Chairman said they were all much indebted to Mr. Grimshaw for his able and valuable lecture. While agreeing with that gentleman's remarks, he must add that most bee-keepers were obliged to go in for generalisation. But there were scientific gentlemen, members of the Association, who had both time and opportunity to devote to the specialities of apiculture; and if they would each study one particular branch of that industry, and give to the bee-keeping world the results of their labours, in the same way as physicians and physiologists assist one another, the cause for which they met would be advanced to an incalculable extent. He proposed a vote of thanks to Mr. Grimshaw.

Mr. Sambels heartily seconded the motion.

The Rev. G. Raynor then proposed a vote of thanks to the Chairman; which was seconded by Mr. McClure, and acknowledged in graceful terms by Mr. Glennie.

Mr. Grimshaw expressed his thanks, saying that he had been honoured by a patient hearing, and also by the interesting conversation which had ensued after the reading of his paper. He would at all times be proud to do his best towards assisting the Association by the introduction of subjects for thought and discussion at the quarterly gatherings, and he hoped they would have the benefit of many fellow-labourers.

HUNTS BEE-KEEPERS' ASSOCIATION.

The annual business meeting in connexion with the Hunts Bee-keepers' Association was held at the 'Fountain' hotel, Huntingdon, on Saturday afternoon. In the absence of the President (the Earl of Sandwich) the chair was occupied by Col. A. W. Marshall, J. P. (vice-president). Amongst those also present were the Rev.

C. G. Hill, Rev. C. C. James, Mr. J. Howard, Mr. Z. Hobbs, Mr. C. N. White (honorary Secretary), &c.

The Chairman, in presenting the financial report for the past year, expressed the pleasure it afforded him to be able to give them a more favourable account of the Association's finances than he was in a position to do last year, when there was a balance against them of 5*l.* 3*s.* 4½*d.* The receipts during the past year had amounted to 26*l.* 0*s.* 4*d.*, and the expenditure to 26*l.* 4*s.* 8½*d.*, leaving only 4*s.* 4½*d.* due to the Treasurer. On the motion of the Rev. C. C. James, seconded by the Rev. C. G. Hill, the Report was adopted.

Mr. C. N. White presented the annual report of the Association. It was as follows:—

'The record of 1887, which is now presented to the Association, is, I feel sure, one upon which we may congratulate ourselves. The number of subscribers now far exceeds that of any previous year, and the balance-sheet which the Treasurer is enabled to present will give more general satisfaction than, at the beginning of the year, the most sanguine of us anticipated.

'In addition to defraying the ordinary expenses, the Committee have paid 3*l.* 15*s.* towards the expenses attending the Great Exhibition, which, as representing the bee-keeping industry in England, was held in London in 1886. Mr. Linton, one of our representatives to the British Bee-keepers' Association, has also very generously paid the sum of 2*l.* 7*s.* 3*d.* to the same fund. Thus have we taken a worthy part in an exhibition which has done much to make a valuable bee-product more extensively known and probably more generally sought after.

'Now, although it is undoubtedly gratifying to be able to present such a satisfactory balance-sheet, there is cause for regret, as many old subscribers have intimated their intention of withdrawing their names from the list of members. This action on the part of some of our friends evidently suggests the necessity for reviewing the past, with the idea of securing more general sympathy and support in the future. And here, as a means to that end, I would again emphasise the importance of endeavouring to find a means of assisting members in the sale of their produce. I feel convinced that it is to the attainment of this object that our efforts must be mainly directed.

'Acting again in the capacity of honorary expert, I have visited most of the members requiring advice. I have also delivered a lecture at Hemingford Grey, where fresh members were obtained.

'The Annual Show was held on July 26th, at St. Ives, in connexion with the Agricultural Society's Show, and to this Society we are indebted for the space for our tents and a donation of 3*l.* to the prize fund. Considerable improvement in the quality and appearance of the exhibits has been noticed in previous years, and this exhibition was no exception to the rule. The judge appointed by the British Bee-keepers' Association, the Rev. F. G. Jenyns, of Knebworth, reported that the show was a success, and had rarely, if ever, been surpassed in the history of the Society. The cottagers' exhibits were more numerous than in previous years, and were specially complimented by the judge, who pointed out the non-sectional exhibit of Mr. Z. Hobbs as the best of its kind in the show. The silver medal was awarded to Mr. J. H. Howard, jun., Holme; the bronze medal to Mr. R. Allpress, Fenstanton; and the British Bee-keepers' Association certificate to Mr. Z. Hobbs, Little Stukely.

'Copies of the *Bee Journal* have been sent round to thirty-seven members weekly, but very few have been returned.

'In concluding this report, I regret feeling compelled to surrender the official position which I have held since the formation of the Society in 1882, but I trust that, with the kind assistance of the Agricultural Society continued, and the hearty co-operation of the bee-keepers and their friends in the county, our work will be carried on with vigour and success.'

The Rev. C. G. Hill moved, and Mr. Howard seconded, the adoption of the report, and the motion was carried unanimously.

In the course of a conversation which ensued on the present condition and future prospects of the Association, the Rev. C. G. Hill threw out a suggestion with regard to the Society's meetings. Huntingdon, he said, ought not to be always the place in which the meetings of the Association were held. To bring the objects of the Association thoroughly home to the minds of the cottagers it would be necessary to form smaller areas in which meetings might take place. If, for instance, the various polling districts were taken, honey might be exhibited in those districts, and a number of prizes could be apportioned to each. That, he believed, would greatly tend to popularise the Association, and would carry out its principal objects in a more effective manner.—Mr. White pointed out that the chief objection to that plan would be the additional expense it would entail, and this the Association would really be unable to bear under the present circumstances. Prizes might certainly be given to local centres, but it would be a great pity to adopt any scheme which would in any way tend to do away with the annual central show.

On the motion of the Rev. C. G. Hill, seconded by the Rev. C. C. James, Lord Sandwich was unanimously re-elected President. Mr. Marshall was then thanked for his past services, and also re-elected. The Rev. C. C. James suggested the advisability of having a paid secretary, but Mr. White pointed out that the funds of the Association would not permit of this. For himself, he added, he would at once say that he could not consent to receive payment. That was not the idea which possessed him when he first undertook the office. The secretary should be a gentleman who had more time at his disposal than he had.—The Rev. C. C. James was then requested to accept the office, but this he declined to do on the ground that he had not sufficient time to devote to the work.—It was found impossible to make a definite selection of a successor to the retiring Secretary, and, Mr. White consenting to continue the duties in the meantime, the matter was left to the next meeting of the Association on April 28th.—Mr. J. Linton and Mr. White were appointed as representatives to the British Bee-keepers' Association, and one or two alterations were made in the composition of the Committee.

WROCKWARDINE BEE CLUB.

The annual meeting of this Club was held in the Boys' Schoolroom, Wrockwardine, on Tuesday, the 17th inst. The report of the hon. treasurer and secretary (Miss M. E. Eyton) showed the Club to be in a flourishing condition, both as regards funds and members. Nine new members have joined during the year, and the Club now numbers thirty. Great interest has been taken in the examinations held by the B. B. K. A., and during the year five members, three of whom are cottagers, succeeded in passing as third-class experts. Of these five, two have also been successful at the examination for experts of the second class. Several of the members were exhibitors at the County Honey Show, and succeeded in carrying off four prizes in all. The Club Show, held in September, was a most successful and encouraging exhibition, and altogether the members may fairly congratulate themselves upon their advance during 1887. This prosperous state of affairs is chiefly due to the unfailing interest and fostering care of their indefatigable hon. secretary. The following were elected as officers during the next year:—President, the Hon. Mrs. R. C. Herbert; hon. secretary and treasurer, Miss M. E. Eyton; assistant-secretary, Mr. John Palmer.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

VIRGIN QUEENS—CONSANGUINITY.

(*Continued from page* 34.)

[1442.] The mother being of a pure variety the drones are, according to the ideas of many, pure also, but in this particular I am not a believer. If the drones of a pure, say Italian, mother mated with a black drone are examined they will be found, as a rule, much less decidedly marked than those produced from, say, the same queen's sister who is purely mated. I should like bee-keepers to pay particular attention during the coming season to this fact, which apparently shows, although it is a subject that requires further investigation, that there is an influence produced upon the drone progeny by the mate of their mother. This theory is supported by several very advanced bee-keepers of the present day both here and in America.

Presuming that the drones are entirely of the same blood as the mother, we, by increasing the opportunities of drone production, accomplished by providing plenty of drone comb in the brood nest, introduce fresh blood to most of our other stocks. Especially will this be found beneficial where certain queens are allowed to fly at the same time that these particular drones are on the wing. I have thus shown how by purchasing queens at a minimum of cost, that is as virgins, a change of blood can be introduced into an apiary with a result as beneficial as would accrue by introducing a fecundated queen at the usual almost prohibitive prices charged for them.

Another advantage is also gained, inasmuch that virgin queens will be accepted by queenless stocks with much more favour than fertilised ones.

It is of little use paying so much money for purely fertilised queens when it is so exceedingly difficult to keep a distinct variety from becoming hybridized. Again, what is the use of the honey producer, who desires the largest crop obtainable, wasting precious time at the busiest season of the year watching or assisting the pure mating of his queens? It is so much time thrown away with a very questionable result. It is true that some of these virgin queens may be mated with drones of an undesirable character, but by supplanting all worthless queens, which every bee-keeper must do to ensure success, the risk of such a *mésalliance* is reduced to a minimum. The chances of such mating also holds good with the daughters of purely fertilised queens; it is only the purely fecundated queen that will produce offspring true to the variety which more often than not are characterised only by a certain regular colouring. It is also not the pure race that produces the largest crop of honey, but the hybrid.

Many, no doubt, will say that the same advantages are gained by purchasing a purely mated queen. I answer, to a certain extent they do, but if three virgin queens can be purchased for the same price as one fertilised queen a great gain is obtained, inasmuch as the three colonies presided over by the latter, will produce three times as many drones as the colony headed by the former to improve, by crossing, the other stocks in the apiary.

Virgin queens can be produced and delivered into customers' hands at an earlier date than fertilised ones, so that the advantage of having an infusion of fresh blood will be felt during the current season in those stocks where the same are introduced. A queen of the current year will not, as a rule, produce so many drones as one of the previous season, but her adaptability to be moulded into a form desired by the bee-keeper can be easily taken advantage of by supplying an extra amount of drone comb in the brood nest, this, if the colony be well crowded will always facilitate the production of an almost unlimited supply of drones; whereas, in many cases, fertilised queens of the previous year cannot be obtained until after the natural desire on their part to produce drones has very much abated.

The next point that presents itself to me is that of temper of the workers. It is a well-known fact, but very often exaggerated, that hybrids between English and Italian varieties are somewhat irritable, this characteristic no one seems clear as to how or from which parent it emanates: there are without doubt some grounds for such an assertion. It will be quite foreign to these lines to inquire as to the why or wherefore; it is there, but can be easily eradicated by gradually weeding out those queens which produce such vicious progeny. A cross between an Italian mother and a black drone is but rarely imbued with this temper, it is the opposite cross where it is so self-evident: even this drawback is gradually being eliminated by the system advocated above, practised by all queen-breeders of any note.

Virgin queens can be forwarded to recipients by the ordinary means with as little chance of damage as fertilised ones: in fact, theory would lead one to suppose that less damage would be the result, and no doubt it is so; numbers are in America sent through the post without suffering any deterioration.

Sending Virgin Queens to other Apiaries for Fertilisation.—A change of blood can be obtained by these means which will be found very advantageous to those who, having friends living at a distance, not under seven or eight miles, are willing to allow a nucleus hive or hives to stand in their apiary, or even to be placed in a corner of their gardens if they are not bee-keepers, that the queens may be fertilised by drones issuing from hives in the neighbourhood. There are just a few difficulties to be surmounted with this plan. One of the first that presents itself to my mind is that now and then a queen gets lost on her wedding trip; this would often be a source of annoyance to the person who has them in charge, although he may be quite ignorant of the cause; but here and there would be found some, especially novices in queen fertilisation, who would perhaps cast a certain amount of blame upon the shoulders of the would-be friend if he received his nucleus back minus the queen.

If a nucleus hive had to be sent by rail the item of carriage would be quite a consideration. It would not answer to send the queen with a few workers in a travelling-box or cage, as the recipient would have either to provide a nucleus hive or else introduce her to a fresh stock, from which the queen would first have to be removed. One, I think, would very seldom find a bee-keeper so obliging as to do this. Then again, the chances of successful introduction would have to be taken into consideration, as well as a second introduction when the queen was to be located in her permanent domicile.—W. B. WEBSTER.

(*To be continued.*)

VIRGIN QUEENS.—QUEEN-BREEDING.

[1443.] In last week's issue both 'W. H.' and Mr. Webster offer food for thought relative to above,

and we may well consider if we have hitherto made the most of our opportunities in these directions.

During the last two or three seasons we have exchanged virgin queens with other bee-keepers (at one time as many as eighteen were obtained from one hive), have successfully introduced some, and when fertilised again distributed them. Whether owing to less care being taken in introducing, or other causes, many more failures were met with than with fertile queens; but as virgin queens can be produced at from one-fourth to one-tenth the cost of the former, this is not of so much consequence; our practice being to smoke the nucleus and let the virgin queen run in and take her chance. While on this subject, there is one other matter connected therewith worth attention. We are not aware the practice has been followed by any but ourselves, *i.e.*, sending queen-cells and frames of eggs of the different varieties for the purpose of raising queens therefrom; the former has only been partially successful, perhaps the shaking, &c. of the immature princesses during transit had much to do with this, and extremes of heat or cold.

On the other hand, frames (wired) containing eggs of the various Eastern races and of Carniolan queens, &c. have been almost invariably successful when subjected to proper treatment after arrival; and as *one* frame may contain eggs from queens imported from *two or three* different countries the plan may be worthy of fuller development. Of course it is generally necessary that bees (say one pound or under) accompany to act as nurses, although there is not much doubt that given suitable weather a parcel containing eggs would be safe after a few hours' travelling in the mail-bags.

During the past five years we have handled and raised a considerable number of queens of various races, also natives, and can fully endorse the remarks of 'U. H.' on the value of fresh blood, whether native or foreign, when introduced to apiaries where in-and-in breeding had been allowed.

Referring to postal arrangements, it appears hopeless to expect that until other weightier matters—such as an excess of 3½*d.* being charged per letter to the Australian colonies over that of our neighbours, of circulars being posted by the ton in Belgium for redelivery in England, &c., &c.—are satisfactorily adjusted, that we shall be able safely to drop our surplus queens in the letter-box. Perhaps half-a-dozen so posted may be safely delivered, but the seventh will bring an official notice that 'Live bees are not allowed by post,' and the parcel (after a week's rest) will be delivered personally to the sender.—JOHN EDEY, *St. Neots*.

PREVENTION OF INCREASE.

NUMBER ONE.

[1444.] Prevention of increase of colonies of bees does not mean to prevent the increase of bees by any means, as this would be exactly opposite what we do to gain the best results, for no bee-master ever had too many bees in a hive. Its object is to prevent swarming in a measure, but more especially increase in numbers of his colonies, which is always done at a loss of surplus honey and expense of new hives, combs, and reducing the season's profit. My plan is no theory, but the result of five years' experience with one hundred colonies of bees.

It is as follows: As the preparation begins when bees are set out, I will begin with April 1. In the first place I will say I use the Langstroth hive 16½ inches wide, allowing 1⅜ inches from centre to centre of combs; brood-frames 9 inches deep, thus it will be seen that I have a broad, shallow hive, which I find the best, all things considered, for profitable bee-keeping, and as I am a specialist at bee-keeping, have been obliged to make it pay. I strive to keep queens that will fill ten combs with brood; this hive will certainly give room for the most prolific queens, which if crowded in a small hive are too willing to swarm out. Then again, if we contract too much, we shall crowd pollen into the sections. This size of hive obviated these troubles.

My belief is that the bees control swarming, and that the queen is always opposed to swarming. It is, therefore, the bees we must please. Knowing just what they require we may proceed to manipulate them to the best possible advantage.

First, then, in early spring, when set out, allow one day's flight for them to mark their location, then examine every colony, taking away all combs not densely covered with bees; then crowd with division-board, being sure they have abundant stores; cover up warm above and pack warm at sides of hives to hold the heat of cluster and hasten brood-rearing; leave entirely alone twenty-one days, when young bees will begin to hatch; then examine once a-week, adding the combs as fast as young bees emerge to cover them.

The combs should be added to outside of brood-nest, one at a time, as warm weather advances, until all are in. Young bees will now hatch as fast as the queen can fill the empty cells with eggs; the swarm is now a rousing one, and the hive packed full of bees, brood in all stages, and honey (the old stores) mostly consumed.

It is now June 1; clover begins to yield, and we see the combs begin to whiten. This is the proper time to place on a super filled with sections, having starters in them, which will be taken possession of immediately, and honey will be stored rapidly, and if left in this condition swarming would be the result. We watch the super, however, and before it is quite full we raise it up and place an empty one under it, always adding extra room before quite needed, and if the hive is standing in the sun a shade-board is placed upon it. Managed in this way throughout the season swarming is scarcely ever thought of, and not one colony in twenty-five will cast a swarm, as all the energy of the bees is bent upon honey-gathering. The strength of swarm is kept up by the queen having all the room she can fill; consequently, the white honey all goes into sections. But should a swarm issue we proceed at once to profit by it, and hive them so that no time is lost for work in the sections. This we accomplish as follows: As soon as all the bees are in the air we turn the hive clear around, so that it faces the opposite direction from what it did; setting it just off the stand

We now place a new hive on the same stand as the old one occupied, and put seven combs or frames with foundation in it. Take three combs of brood from old hive and put in also; then place the super, or supers, as the case may be, on the new hive, and hive the swarm back in it, letting the old hive remain until towards evening. At that time all the flying force will be back in the new hive on the old stand. Now open old hive and shake and brush all remaining bees down in front of new hive, when they will all run in. We now have all the bees of the swarm, and all left in old hive on new stand. That colony is now done with swarming for the season. There is a strong field force, no combs to build, or supers of unfinished sections to fill up. The bees have gained a new impetus by swarming, and the work goes on rapidly: no loss of time, no increase, and a double surplus will be taken.

We now return to the old hive, which is taken into honey-house, queen-cells cut out, honey extracted, and the brood given to stocks not overflowing with bees, to nucleus, or to artificial increase (if we wish such), or still better, held over till next day and a swarm hived on them and treated the same as was the one the day before, as regards supers, &c., and so on to the end of the season: when we find we have had half-a-dozen swarms, and yet only our one hundred stocks in the yard in the

fall, the original number in the spring. Following up this method during the season, an extra yield of comb-honey can be secured, fully as much, I believe, as of extracted.

After July 10, the supers can be contracted to the close of the season, leaving few unfinished sections to carry over. These latter can be extracted and combs kept for the next year. Should I wish increase I should manage my apiary as above until after clover and bass-wood bloom, then divide and let them fill up on fall flowers.—E. A. MORGAN, *Columbus, Wis.* (*American Apiculturist.*)

WHAT INDUCED ME TO KEEP BEES.

(*Continued from p.* 40.)

[1445.] I got another bar-frame hive. I knew all about what ought not to have been done. Had another strong swarm this time from the skep which the lady made me a present of. This time I gave the six frames and left the opening full width and a feeder on. A few days after I gave the ten frames, and when I was satisfied that they wished to work above I put on the large bell-glass which I got with the skep. It was about half filled with honey when I got it: I thought it would look very nice as an ornament when it would be full of honey, but I counted my chickens before they were hatched; in a few days all the furniture had disappeared, they had taken it down below.

I caught a severe cold the night that I kept my bees company, which turned to bronchitis. I gradually wasted away for three months. I had a daughter at this time troubled with a short cough; I knew well what that meant. We took our walks together, thinking that soon we must be parted from those who are very dear to us. Just at this time I thought I would send to friend Huckle for the leaflet 'Honey as Food and Medicine.' There was not much medicine that I could see about it, but I saw it was good for food. I had my bread cut very thin, then spread honey on it, and made a sandwich of it. Before twenty-four hours I began to feel a different man. I got my daughter to take some; her cough has left, and we are now in as good health as any person could wish, and I thank God for it. Calling upon a bee-keeper a few days ago I found his wife had the bronchitis; her case was worse than mine. I told her of my cure. She tried it, and is now able to go about as usual, although seventy years old. People looked at me and said, 'Why, you are quite well!' 'Oh, yes! the honey has done it.' I was soon sold out, and not less than 1*s.* per pound, some more. One thing I know; I shall always try to keep 100 pounds of honey per year for home use. Once let the value of pure honey be known, and then our friends may do better than they have ever done before, both for themselves and to benefit their fellow-creatures. I hope that some who read these few lines and who have the bronchitis will just try it, and write a few lines respecting their cure and send them to the Editor for publication. Eat the bread very, very slowly, don't wash it down with tea or coffee. I believe in God's providence, and here we have one of His good gifts.

I have got a long way from the hives. I must now get back. Well, I was so delighted with my bees, just to think what good creatures they were. I had a great many visitors coming to see the bees working—indeed, it was becoming almost like a show; every person that came to the house must see the dear bees that I looked upon as having under God's providence saved my life. A very sudden stop was put to my peeping. It is the last feather that breaks the camel's back, and so I suppose that they had put up with my prying until they were determined to resent it. A young man wished to look. I lifted the top, and in a moment the bees lifted me. We ran (I know some bee-keepers will say 'What cowards!') into a shed a few yards off, but the bees followed us. The young man managed to get behind me in a stooping position in one corner. The bees placed their stings into my face as if it were a pin-cushion, and it resembled one for a few days afterwards. At last I said, We must run for it, and we did run. When we had got out of harm's way he drew the stings out and pressed his watch-key on them to get the poison out.

Now all this can be avoided. We all wish to learn as much as possible about 'our bees.' Thanks to Abbott Brothers of Southall, London, for their cheap observatory hive, Messrs. Neighbour & Sons, Regent Street, London, and others, we can now see what is wanted; before we were still partly groping in the dark. We get one lesson respecting our frames hanging true. How many of us have found our frames near each other at the bottom of hive, and consequently the next space further off than it ought to be? I now do the following. Place a piece of wood between each frame one inch in length and $\frac{5}{8}$th of an inch square, keeping them about one inch from hive side, and resting on bottom of hive. Again I have found the bottom bar bent so that it touched bottom of hive. This is very annoying to the bees. I now have a piece of cork about a quarter inch deep and glue it on centre of bar. We can hardly expect our hive-makers to do this work for us, as they put everything in our way for as little money as possible. We have also gone a step further in the observatory hive. We can now see our bees feeding, piercing their candy, and making it like a beautiful piece of coral work. Thanks to the Productive Tin-plate Worker Association, Masshouse Lane, Birmingham, for their Excelsior bee-feeder. How pleasant for an invalid to see all this when he cannot get about.

Now to return to my skep which the lady kindly gave me. With one skep being on the top of the other the bees got in between the skeps and came out same way, as well as others using the bottom entrance. Query: Can something not be done with our bar-frame hives? It would save the bees a great amount of travelling up and down in the hive; I mean just when the honey is coming in freely.

And now, in conclusion, I am glad to say that I have never seen or heard any of the hobgoblins or will-o'-the-wisps in my hives. Cleanliness is next to godliness. Commence this season well. Begin by getting at least one new hive, and do not omit to order an observatory hive. Paint it well outside with four coats of good oil-paint, and paint the inside with Mr. Cowan's prescription. When there is no smell from the paint then commence to put the bees in, and treat every hive in the same way. To beginners, Don't be alarmed by all the thousand and one things you read about. I quite expect to hear of the Hessian fly or the Colorado beetle being found,—almost anything, but I am quite prepared for anything in that line; nothing will deter me from keeping bees. Bee-keeping is with me a great pleasure; indeed, I may say they contribute to my happiness as well as the *pocket*. The *Bee Journal* I prize very much, although we do get unpleasant things to read about, such as damp hives, mouldiness, and that other thing, &c. If you are determined to have 1*s.* per pound for your honey, get the bronchitis.—T. H.

NOTES ON BEE-HIVES—SECTIONS.

[1446.] During the season of 1887 I have made a number of experiments in order to find the best method of securing sections filled evenly and entirely. I have had colonies worked upon the various lines indicated in the issues of the *British Bee Journal* for the past two years, and will here just say the method which has given the most perfect result. The four inner faces of the sections have a small groove into which the foundation is placed at the time of setting up the sections. This foundation fits rather loosely in

order to allow for a slight expansion upon being treated with the heat of the hive. I find the bees fix the four edges of the foundation to the sides of the sections 'first thing they do' invariably. I use Dadant's thin foundation, which I import direct from their establishment in America. After this is worked out, the so-called fish-bone cannot be detected, and I have never found this foundation to fail, break down, or be removed or destroyed by the bees. Dadant's extra thin foundation I fix all round with molten wax by means of a sable-hair pencil, afterwards scraping the surplus wax away with the point of a penknife. When foundation is fixed by either of the above methods I have had 100 per cent of finished sections without a single pop-hole.

The grooves can be easily made by means of a small plane, or a small circular saw. I cannot bear the appearance of a line of wax showing upon the outside of the section, as is the case with the Lee section and the one figured by Mr. Simmins in his *Modern Bee-farm*.

For all practical purposes, appearance, &c., the very best section is the four-piece pin-dovetail section. Those I import from Mr. Heddon have their faces beautifully smooth, and the wood is nearly as white as milk. By means of slotted dividers I have not obtained more than 80 per cent of sections free from pop-holes when the the ordinary one-piece sections have been used in the cases of two-ways and four-ways respectively, and the most approved section-cases have been used, the defects being caused by the wood corners of the one-piece sections. My best results have been made by using wide frames, as illustrated in Heddon's *Success in Bee Culture*, the wood of the sections being quite free from traces of propolis, &c., and the sections evenly and entirely filled. I have come to the conclusion that a vertical unobstructed passage is what is required in order to have the corners filled, and that this is almost impossible with the one-piece section with two bee-ways, or even four bee-ways, to secure entirely filled sections every time owing to the wood corners. I have most carefully tested the new patent Heddon hive with reference to sections, and find it unsurpassable for this purpose.—T. Bonner Chambers, F.L.S., *Tref Eglwys, January* 18.

HONEY LIQUORS, CONFECTIONS, &c.

[1447.] Mr. E. McNally, of Rutherglen (1417), will probably get the information he requires as to the names of manufacturers who use honey in their goods, if he communicates with the Hon. Sec. of the Berkshire B. A. I remember they had an exhibition at Reading some years ago, at which such articles formed a very prominent feature. A reverend gentleman, whose name I forget, took great interest in the matter, and did much to bring the many uses of honey before the public.

The Dorset B. A. also had a stall at their shows for some time for the sale of confectionery, drinks, &c., in the manufacture of which honey was used. I tasted many varieties and found them excellent. The biscuits made by Messrs. Huntley & Palmer, of Reading, and called 'Honey Drops,' are so good that I do not like to be without them. They are sold in tin boxes at 1s. per box.

There were many announcements in the *Journal* a few years ago giving such information as Mr. E. McNally now wants. If he fails to get the information from other sources I dare say he can get access to a file of bound volumes. The report of the B. B. A. exhibits at 'The Healtheries' will be especially useful to him. Mr. W. H. Dunman, of Dorchester, late Hon. Sec. of the Dorset B. A., and Mr. W. N. Griffin, of Reading, late of the Honey Depôt, Freshford, Somerset, could probably give much acceptable information on the subject.—West Countryman.

WHO IS 'AMATEUR EXPERT?'

[1448.] This is a question which none of us would have thought it necessary to ask as long as that *nom de plume* attached itself only to the pleasant chit-chat and friendly criticisms which have appeared from time to time in the pages of the *British Bee Journal*. Lately, however, under cover of the same fictitious name, an attack has been made in the columns of a *Canadian Bee Journal* which will naturally incline us to ask, 'Is this the writer in the *B.B.J.*, whose letters have crossed the Atlantic? Are the two "Amateur Experts" in reality one and the same man?' As chairman of the Board of Examiners of the B.B.K.A., I am perhaps in a better position than any one to refute this attack which is made against those who conduct the examinations for the third-class certificates of the B.B.K.A. 'Amateur Expert' says that *the candidates are required to find the queen in ten minutes by examiners who would probably take ten hours to find her*, or words to that effect. We can only interpret this to mean that these examiners are incompetent men, and I think it due to the British bee-keeping public that I should say that this is altogether a false charge. Although as chairman of the Board I have signed nearly all the diplomas to examiners which have been issued, I have never acted in the capacity of third-class examiner myself, and have therefore less hesitation in saying that the examiners have always been chosen from those who were known to be most competent, nor have any been appointed about whom the Board felt any doubt as to their fitness.

May I be allowed to give this advice to those who use a *nom de plume*: Do so as long as you please, if protected by its shelter from the public gaze you feel more confidence and can write better for the good of the community at large; but when you think it necessary to make attacks which are more or less personal—use your own name!—Henry Bligh, *Hampton Hill Vicarage, January* 19*th*.

PARALLEL *v.* RIGHT-ANGLE FRAMES, &c.

[1449.] Having read a good deal of the correspondence on the above subject, I should like now to give my experience and the result. I use some long hives with the frames parallel, and some hives with ten frames. I can turn either side to the front, as my entrances are all sunk in the floor-boards. In 1886 I wintered fifteen stocks on the parallel, six on the right-angle, and last spring I had one queenless on each system, and one rather mouldy on each system. I have not lost a stock for several years, except one I tried to winter as an experiment on the right-angle in a half-inch hive, which died. My four best stocks last year on the parallel system gave me, as near as I can say, No. 1, hybrids, 53 lbs. and 91 sections; No. 2, Ligurians, 101 lbs.; No. 3, blacks, 56 lbs. and 41 sections; No. 4, hybrids, 91 lbs. The four best on right-angle: No. 1, blacks, 68 sections: No. 2, blacks, 66 sections; No. 3, hybrids, 46 lbs. and 14 sections; No. 4, blacks, 32 lbs. and 21 sections, which leaves me in favour of parallel frames. I have not found any difference in the healthiness of either system. I prefer manipulating parallel frames. I was pleased with my Ligurians beating all my others but one, and they the No. 1, hybrids, which I should have said were two lots wintered in a fifteen bar-frame hive, and having a queenless stock. On May 28th I took one queen away and united the others, they giving the 53 lbs. and 91 sections.

If it will interest the readers of the *Bee Journal*, I will explain how I managed the Ligurians, which are a mile from home. Wintered on nine bars. On January 20th I found entrance stopped with dead bees. April 5th, examined and gave 1-lb. cake of candy on top, and two pounds of dry sugar in dummy

at back; in May gave 2 lbs. of liquid food. June 10th, doubled to twenty bars, putting the stock at the top, and five bars of comb and five bars of foundation in the bottom hive. June 16th, gave ten more bars of foundation in the centre. June 29th, gave five more bars of comb and five bars of foundation under top box, making four storeys high. July 29th, took top box, ten full bars. August 15th, took nineteen full, one empty, leaving stock strong and plenty of honey.

I am now going to give the Carniolans a trial, having received one of Mr. Benton's selected queens, and successfully introduced her, October 4th, on Mr. Simmins's principle, as I have done several before. On November 26th young Carniolans were out, on December 16th a lot were out, and on January 8th and 9th all the bees had a good cleansing flight.—LIGUSTICUS.

PARALLEL *versus* RIGHT-ANGLED FRAMES.

[1450.] We are invited by the writer of 'Useful Hints' to the *B.B.J.* to publish our experience in regard to the above question, *i.e.*, whether frames should be hung parallel or at right angles to the entrance. We can scarcely claim to have any experience in the matter, as we have never worked a single stock on the parallel system. Our objections to it are rather theoretical than practical. But so thoroughly convinced are we of its demerits that we have never even considered it necessary to test it. We could tolerate it, and even recommend it as perhaps the best arrangement for wintering weak stocks, and we have frequently practised it so far, keeping the bees on a few frames well back from the entrance, and chaff packed. It may work well also in building up stocks in spring, since it is unquestionably the warmer system. But when our stocks come to full strength we could not tolerate it. It would be impossible for the bees, of what *we* call strong stocks, to get jostled past each other in the limited passage afforded by a comb hung across the entrance. Under the right-angled system the bees have all their streets opening clear out to the country, in our case ten in number, not counting those at the sides. Under the other system every passenger has to burrow under or scramble round *each* of the ten or eleven combs the hive contains before reaching the back. And so, of course, with the ventilation. Only in one way could we tolerate it, viz., by propping the hive from the floor-board so as to give entrance all round. Our *great difficulty* in bee-keeping has been, and to some extent still is, not to get stocks strong, but to *keep* them strong, which means during the honey season to *prevent swarming*. This we can almost certainly do under the system we prefer, but we would consider it a hopeless task under the parallel system.

While acknowledging that we have never given the latter system a season's trial, we should like it to be understood that we are not strangers to it. We have handled for others many hives on the combination principle; but in no case did we ever find one that could compare in results with our own.—W. R.

So far as actual experience in working hives on the parallel system goes, we are only a little in advance of 'W. R.' We have in our apiary but one stock of bees with frames so hung, and this is one of two 'long-idea' hives presented to us last year by a friend who was reducing his stock. Our experience, therefore, of parallel frames is too limited for us to speak with authority for or against them. At the same time, we have seen enough of the combination principle in the hands of others to be quite sure we shall never adopt that plan. Tiering-up recommends itself, both in theory and practice, over lateral extension so unmistakably that we shall never give the latter a trial. As to hanging frames parallel to entrance, it has something to recommend it, so far as actual manipulation goes, because, no doubt, it gives some advantage in having lateral space in the rear, when hives are made to accommodate more frames than are in use by the bees.

It is also hardly likely that we should be much troubled by bees jostling past each other, as our colleague suggests, because we could not tolerate a hive for our own use wherein a free passage and free ventilation all round could not be readily given in hot weather. Seeing that the question has been put to us, and that we have a couple of these hives on our hands, we shall give the matter some attention; but, while endeavouring to keep an open mind regarding it, we have a strong conviction that we shall prefer to work with frames at right angles to the entrance in the future as we have in the past.—W. B. C. (*The Bee-keepers' Record.*)

COUNTY BEE-KEEPING ASSOCIATIONS.

[1451.] Your article under this heading has presumably produced the effect which was intended, and as far as comment upon it has gone it has been fully justified. As a County Secretary of many years' standing I thank you for opening your columns to a discussion which I trust will not be closed until the committee of the British Bee-keepers' Association admits that its future position in the world of bee matters requires it to give its aid in elucidating the questions commented upon.

It was not a little remarkable that coincidently with the appearance of the article the intimation of Mr. White's retirement from the honorary secretaryship of the Hunts Bee-keepers' Association, under circumstances so closely resembling those indicated in that article, should have appeared. Simply stated, his resignation is owing to the lack of assistance afforded to him in the management of his Association.

I have carefully read the observations which have been made by your several contributors, and there are a few that I should like to remark upon. Of Mr. McClure (1449), I would ask, Why is it that the County Association, of which he is honorary secretary, 'has not begun to fill the place it was intended to take?' and what hitherto have been the aims which have so long prevented it from beginning to fill that place? Surely during the time that it has been in existence it has done something more than form an organization? If not there is at once good ground for the suggested investigation. Replies to these would in all probability afford additional justification for the article, but possibly not from exactly the same quarter as the writer expected. Mr. McClure brings into strong contrast the character of his committee with the one described in the article referred to. Could it but be known how such attendances were secured, and how to ensure their successful application in other counties, one of the chief causes of anxiety would be overcome. It is to be sincerely hoped that the enthusiastic hopes which Mr. McClure indulges in may be realised, and that he may soon see the bee-keepers of his county working their districts up and these workers greatly assisting the County Secretary. The conclusion to which Mr. McClure is led, in reference to the ultimate position of the County Secretary, is the same which I foresaw many years ago, and which I communicated to the *B. Bee Journal* during the time it was in the hands of Mr. Abbott; and it has been a matter of surprise to me, as it must have been to many others, that the voluntary efforts of a few devoted men filling the post of honorary secretaries in each county have so long supported and maintained the position of the respective Associations as has been done. The enthusiasm of one individual may do much; but can that enthusiasm be depended upon to continue if the objects on which its aim is fixed are uncertain and indefinite? I venture to assert that we do need some stimulus that shall rally the energies and direct the efforts of those who are interested

in the welfare of County Bee-keeping Associations, otherwise we shall find our ranks thinning, and the Associations assuming the character of which America supplies the type.

Turning to Mr. Hooker's contribution, I note he speaks of the considerable progress which has been made by some of the County Associations, the able management of exhibitions, the questions of visitors, &c., but concludes by saying, 'Still, much remains to be done.' Further on he attributes the decline, if such is shown, to 'something wanting in the organization and management.' This may be the very point and centre of the enquiry; and if so, the consideration of the matter by the Committee of the B. B. K. A. as suggested should be productive of great benefit at the present juncture.

Mr. Hooker does not leave us to find a remedy for the state of things complained of, but lays down an excellent programme, upon the carrying out of which he foresees a new period of prosperity. But can we at this period count upon a re-awakening of enthusiasm with which to produce so desirable a result? I fear not. In our Association we have local honorary secretaries, and it may be taken for granted that the best appointments possible have been made. The result is seen in district branches being formed on precisely the same footing, but showing very different degrees of energy and interest. For this inequality many circumstances must be brought into account, but rarely, if ever, does it happen that a complaint is formulated, or even a hint given, that any locality was prepared to furnish a better local secretary. Should the fault of the condition of things be attributable to the County Secretary? A simple remedy may be found by the members at the annual meeting replacing him by some one better fitted to carry out the duties of the office. I do not thrust myself into the controversy in any feeling of alarm, but solely with the object of furthering the inquiry which has been opened out, viz., What is the state of the *internal working* and the *individual condition* of the County Bee-keeping Associations? —Jesse Garratt, *Hon. Secretary K. B. K. A.*

MARKETS FOR HONEY.

[1452.] Your correspondent 'Sherborne' must be one of those 'Peculiars' as no fellar can understand; he is pecking at all around, and himself too, but the latter fact need not, I think, concern any one but himself.

I feel sure correspondents and readers alike are not unmindful of your ever readiness to give space for all such matter communicated that is interesting and calculated to assist us on the path of learning: further, your liberality for giving broad gauge to fair and honest criticism is widely acknowledged; to say the least then, it is not generous on the part of any one to desire to force intrusive matter into your columns. Hence, I have ventured to thus express myself, not that I fear you would deviate from the course you have hitherto followed, and which is, I believe, so generally appreciated and has landed us with our fifteenth volume, but to record my warmest thanks and approval of the manner you conduct the *Journal*, which to steer clear of dissensions is, at times, doubtless a difficult task.

Permit me through your medium to tender 'Sherborne' my thanks for his useful hints on the question of the price of honey, and to congratulate him upon his great success after his efforts of obtaining what, under present circumstances, may be considered so fair a price for all his honey, and having also found, too, two or three markets for another year, which, as he says, is some small consolation to him (I should feel it a very great consolation.) Now here is a grand opportunity for 'Sherborne' to help those around him who may be less able to help themselves by letting such into the secret, say, of where *one* of the three markets may be met with. I don't for a moment doubt he will wish to monopolise all three markets, and it would be an excellent example.

Nothing like persevering oneself. 'Sherborne,' to be discontented and to find fault with others for their non-success in finding a ready market for your honey surely is of no avail. Vast is the advantage gained by careful study of the various articles put before us week by week in the *Journal*; few less in importance, perhaps, than some which have appeared of late in reference to the system by which such enormous stocks have been produced in so short a time, and the great yield of honey obtained. I have a statement before me, given by a member from the Ulceby district of Lincolnshire, telling me how he worked up his stocks last season to an enormous size, and the great yield of honey consequently obtained, and the fact was fully demonstrated. I admit I have never yet been able to accomplish such great things, but I nevertheless readily admit they are accomplished, and right glad am I to know it.

A happy outpour, whether 'Sherborne' intended it or not (January 12, page 27), the *very trade*, forth it goes, —bee-keeping and chimney-sweeping. I never once thought of the combination, and I have long, too, been casting about to find a trade or business that necessitated little brain and labour to which that of bee-keeping could be linked with a prospect of its being profitably worked. The callings of the chimney-sweep are, as a rule, at early dawn, thus leaving the clear day for bee-calling. What trade could be better fitted? How great and good things may result from a slip!—R. R. Godfrey, *January* 23.

ECHOES FROM WILTS, 850 FEET ABOVE SEA LEVEL.

[1453.] As my experience for last week must be different to many, I send you the following report:—

January 9th. Lowest night temperature by Negretti and Zambra, 1 ft. from ground, 39° At 1 p.m., 80° in sun.
January 10th, Lowest 42 At 1 p.m., 82 in sun.
" 11th, " 37 " 76° "
" 12th, " 35° " 70° "

This being the case, bees from all hives flying as in May, and cleansing themselves. At 10 a.m. on 9th removed all doors, slides, and covers, and exposed to sun and air. Bees at once set about cleaning out *débris*. In the middle of the day I helped them with a bent wire. Total dead from twenty stocks less than ¾ pint. Lifted *corners* of quilts only, and saw evidence of abundance of store for the present. Found all hives warm and dry, and floor-boards very clean. Knowing that food was *not* required to be given, I resisted the temptation of spreading frames to look for brood.

My stocks consist of four good skeps and sixteen bar-frames, the latter packed up at the end of October, with from six to ten frames well stocked with sealed food (*mostly* honey), and well covered with bees. I use American cloth quilts, two thicknesses of house-flannel, and over all 3-in. tray of chaff or cork-dust. All my hives have the entrance extending *full width* of hive. When I packed up, I removed all *wood* slides and substituted others of coarse perforated zinc, with entrance in centre ⅜ in. wide, and never had floors so dry and clean. This time last year several of my hives were buried 3 ft. deep in snow.—W. E. Burkitt.

S. CORNEIL.

The subject of this sketch was born of Irish parentage in the township of Ops, County of Victoria, and Province of Ontario, April 7th, 1836. He worked on the farm until he was nearly eighteen years old, going to the common school in winter. He was big and strong for his age, and being the eldest of the family, and the only help his father had, got plenty of hard work. For some time before he left the farm he could take a man's place at most kinds of agricultural labour. He was always ambitious to excel, and won two prizes at ploughing matches before he quitted farming.

From childhood he was a voracious reader, and received many a severe scolding from his father when he was found reading a book while his team was feeding. His father belonged to the Episcopal Church. During a religious revival young S. expressed a wish to join the Methodists. This displeased his father, who told him he might do so if he pleased, and could continue at home, but must do no more farm-work. Learning that an examination of teachers was about to be held at Peterborough, young S. determined to attend it and try for a certificate. Peterborough was eighteen miles distant, but our hero set off with a brave heart on foot. He got a friendly lift part of the way and arrived in good time to undergo the ordeal. He succeeded in obtaining a certificate, and found himself in 1853, at the early age of seventeen, a legally qualified school teacher.

He did not, however, take a school at once. His father, having relented, sent for him to come home again, which he did, and worked on the farm for another twelve months. He then went to the Normal School for a session. He commenced teaching towards the end of 1854, and continued at it steadily for about thirteen years, until June 1867. He married early in life, so much so that statute labour could not be exacted of him until some time afterwards because he was under twenty-one. The third year of his teaching he obtained 400 dollars a-year, which was considered liberal wages in those days, and continued to get as good salaries as were paid to common school teachers at that time, but as the years rolled on and his family increased faster than his salary, it became necessary to look out for more lucrative employment.

He decided to go into the insurance business, at which he has now been working for upwards of twenty years. During his career as a teacher he had the schools in Omemee, Balyduff, Cavanville, Millbrook, and Ashburnham. He has resided in Lindsay for nearly twenty years. While attending the Normal School he was greatly benefited by the teachings of Dr. Ormiston. It was not so much the information that was imparted, as the mental impetus given, that was of value. Young S. at that time acquired a fondness for the study of natural science, which has never since died out. Before he desisted from teaching, Mr. Corneil had obtained the highest certificate County Boards had the power to grant, viz., first class, grade A, permanent. It is still in force, so that if insurance fails, and bee-keeping goes to the dogs, he can resume that

> 'Delightful task! to rear the tender thought,
> And to teach the young idea how to shoot.'

Mr. Corneil has been successful in the insurance business, his receipts having averaged not less than $1800 a-year, but as he latterly remarked to the writer of this sketch, 'It has never stayed with me, and I suppose it never will now;' a condition of affairs in which he is by no means alone. He has been twice married. His first wife, a native of Edinburgh, died in 1858. He married again in 1859, his second wife being a daughter of the late Christopher Knowlson, of Omemee.

In 1875 Mr. Corneil bought his first stock of bees. It cost him ten dollars, as it stood in his garden ready for business. He did not then know a worker-bee from a drone, and had no idea of ever keeping more than three or four colonies—just to supply honey for his own table. He determined, however, to read up on bee-keeping in the winter, when he had more time. He got *Langstroth on the Honey Bee*, and *Quinby's Mysteries of Bee-keeping Explained*,—those old-timed standard books, to which many of us owe so much. He also read the writings of Mr. Quinby in the *American Apiculturist*, getting the back numbers for the purpose of tracing up every item of apicultural information. He was thus peculiarly a disciple of Quinby's, and naturally contracted a preference for the closed-end frame which was used by the great New York apiarist. After reading up on this fascinating pursuit, Mr. Corneil could not be satisfied without having the latest improvements. This meant outlay of money, and to recoup this expenditure, he bought more hives, and went more extensively into bee-keeping. Thus, from less to more, he got into it as a business. When he left home to attend the Colonial and Indian Exhibition a year ago last summer, he had 212 stocks of bees. In preparing them for winter, they were doubled down to 180 to avoid sugar-feeding, and make the apiary self-supporting. They were packed and prepared for winter as usual, but, unfortunately, the bees had gathered a large quantity of honey-dew. About half-a-dozen stocks which were given sealed comb, filled early in the season, were clean, bright, and strong; but wherever there was a considerable store of honey-dew, the bees were either sick or dead. On the first of June of last year, 122 colonies out of 180 had succumbed. Nothing daunted, however, Mr. Corneil went vigorously to work to repair his losses, and, though the past season has been an exceptionally unfavourable one, he has 105 colonies in winter quarters; 64 packed on their summer stands, and 41 housed in the cellar. Mr. Corneil is now an authority on honey-dew, and strongly advises extracting it, and feeding sugar to take its place.

The subject of this sketch is one of our foremost Canadian apiarists, and in the scientific branches of bee-keeping is probably 'the noblest Roman of them all.' He is a careful experimenter, a patient investigator, and arrives at his conclusions logically. He wields the pen of a ready writer, and his articles are always interesting, instructive, and to the point. He has filled the highest offices among Ontario bee-keepers, having been President of the Association in 1884, and one of the four commissioners to England in 1886. In the last-named capacity he rendered invaluable service as book-keeper and accountant, performing a lot of hard work, at late hours, in keeping the cash balance up to the mark.

At the present time Mr. Corneil is experimenting with a straw hive, which he hopes will prove 'just the thing' for out-door wintering in this climate. It is a model of neat workmanship, thanks to the mechanical ingenuity of his son, whom the writer watched one day last winter dexterously weaving in the layers of straw, making a very compact, nice job of it. This hive is designed so as to have the sheets of comb built transversely and converging to the centre, where it is meant to secure a vacant space large enough to admit of the bees forming one solid cluster, instead of being in *strata* between combs. It is believed that, on this plan, bees will hibernate more perfectly, and winter better, than on any other at present in use.

Mr. Corneil has never aspired to municipal or political distinction. But before the change from the Local Superintendency to County Inspection, he was Local Superintendent of Public Schools in Ops for several years. He is now, and has been for the past nine years, a prominent member of the Lindsay Board of Education. —W. F. Clarke., *The Canadian Bee Journal*.

[Many of our readers were brought into contact with Mr. Corneil when acting as one of the Commissioners at the Colonial Exhibition; they will be pleased to read the above interesting memoir.—Ed.]

Echoes from the Hives.

Kilmington, Axminster, Devon, January 23.—We have been having dense fogs here for the last week or two, but the glorious sunshine has come out at last. On Sunday, the 22nd, my bees were taking advantage of it, and were coming out of their hives for a cleansing flight. One would think they were swarming; you could hear their joyful hum for some distance away. They look as if they are in a very healthy state. I have twenty stocks of different sorts, and they have passed the winter all well so far. I cannot complain with what my little pets did for me last year. I took about 500 pounds of honey, which I think is exceedingly well for this part of the country, and, better still, I found a good sale for it; so I think you will agree with me that I have been remarkably lucky. I take the *Bee Journal* weekly, and I find it gives me a good bit of useful instruction, and I strongly recommend it to all other bee-keepers, and then, if they would follow its instructions, we should not so often hear them complaining about their bees not paying them which I often hear as I go about. So I just tell them the results that I have met with since I commenced bee-keeping. They cannot understand getting fifty pounds of honey from one hive of bees until I explain it to them and persuade them to try it. I now wish my fellow-bee-keepers a prosperous year for their little pets. —J. W. Sanders.

Blind Lake Apiary, January 23.—To-day very bright sun; bees having a thorough cleanse, pouring out as if about to swarm. Their cheerful hum is delightful; they are bringing out their dead amongst them. I observe some dead grubs after two or three nights of sharp frost. I have given my opinion to several bee-keepers that we are to have a damp, mild winter and a damp summer. Look out for early swarms, plenty of bees, but small honey harvest. Shall be on the look out for reports from our 100 and 150-pounders this season. I hope they may get them, but am afraid the season will be against them.—Sherborne.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

H. Neeve.—*Sample of Pea-flour.*—The pea-flour is just the thing for the purpose you name. A sprig of heather has been sent you.

R. F.—1. *Best variety of Bees.*—A hybrid bee as the result of a cross between a black queen and either a Carniolan or Italian drone gives better results as an all-round bee than the pure black or Italian. 2. *Addresses of large Consumers of Honey.*—We have no knowledge beyond that appearing in our advertising columns. 3. *Locality for large Bee-farm.*—This is a matter we cannot help you in without a great expenditure of time and money. We should recommend you to look round and try to discover where bee-forage would be naturally abundant, and then go to work there cautiously—*very cautiously*, unless you have more experience than your questions lead us to suppose. 4. *Present Value of Comb and Extracted Honey.*—This entirely depends on local requirements, the quality of the honey, and, last but not least, whether you know how to put it on the market in an attractive way. 5. *Slotted Dividers.*—We must refer you to page 531 of *B.B.J.* for 1886.

Woodsetton.—*Deserting Hive.*—The condemned bees, being not more than a mile from home, returned to their old locality, with the exception of the handful or two which remained with the queen. These, being insufficient in number to keep up a sufficiently high temperature, perished from cold.

T. M. D.—*Decamping.*—The bees from the centre skep (full of honey) having lost their queen, joined the other colonies on the fine day you mention. Or it might be that, being a weak colony, it was attacked by the other bees, and, its queen being destroyed, united with the marauders.

J. W. P.—*Granulated Honey.*—The sample of honey forwarded is very good, with a nice rich flavour. The season of the previous year was very peculiar, being free from rains, and therefore a dry atmosphere, honey when extracted very quickly granulated. Many apiarians found that the honey gathered from fruit granulated in less than eight days, and that from clover in fourteen days. Honey from rape, mustard, and plants of that genus, candies very quickly after extraction.

Sherborne.—You would much oblige by adhering in your communications to bee-keeping, pure and simple.

Malta.—*Wax-moth.*—Strong stocks are the best defence against the wax-moth. If hives are kept strong, having a fertile queen, the moth need not be feared, as it would have little chance of effecting an entrance. As a preventive, care should be taken not to leave old combs about, or allow them to be in hives where moths can enter. Sulphur will destroy the eggs of the moth.

[Captain H. H. has just started bees on humane principles at Malta, and being a novice, would be glad if any bee-master passing through would call on him and give him advice at 86 St. Britannica.]

Business Directory.

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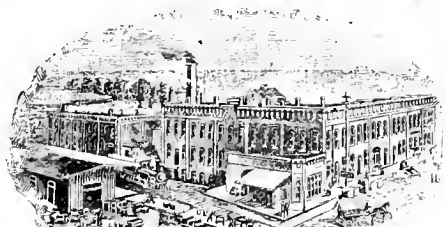
AMERICAN SECTIONS BY THE MILLION

LARGEST BEE-HIVE FACTORY IN THE WORLD



WITH FLOOR-ROOM SPACE OF OVER AN ACRE.

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VOL. XV. OF

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FOR 1887.

EDITED BY

THOS. W. COWAN, F.G.S., F.R.M.S.,

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Editorial, Notices, &c.

PRACTICAL WORK IN THE APIARY.

This month is usually considered one in which the bees should be kept quiet, and the bee-keeper will do well to do so when they are well protected from rain, snow, or cold. Some of our friends may not, however, have taken the necessary precautions in the autumn to pack their bees up snugly or provide them with sufficient food, and therefore a few words of caution may not be out of place. In many hives brood-raising will have commenced, and it is such colonies more than any others that would be likely to suffer most from the cold weather which we may yet have. Every precaution should be taken to prevent the escape of heat from the hives, for heat is necessary to existence, and if it escape the bees must generate more, at a great cost to themselves, or die; and if this heat-producing process is too severely taxed they exhaust themselves, wear out, or become diseased.

Should the bees be short of food from any cause, that in a liquid state should on no account be given them. A cake of candy pushed in under the quilt is the best method of feeding now. The candy is made in the following way:—Put into a tin saucepan about three-quarters of a pint of water, and let it boil, then while boiling gradually stir into it six lbs. of white lump-sugar; keep it boiling until it is quite clear and every particle of sugar dissolved. During the whole time the boiling syrup should be stirred to prevent its burning, as burnt sugar is not only injurious to the bees, but its presence in the syrup will prevent the syrup from granulating or setting hard, and no amount of boiling would produce candy such as we require for bees' food. If the syrup is boiled too much the candy will be too hard and the bees will not be able to use it; if, however, it is not boiled enough it would be too soft, and in this case would absorb moisture more rapidly than the bees could consume it. This would cause it to run down inside the hive, and would be detrimental to the bees. To know exactly when the boiling should be stopped the syrup must be tested. This can easily be done by first dipping a finger in cold water, then into the boiling syrup, and back again into the water. No fear need be entertained of burning the finger, provided it is not left in the boiling syrup too long. If the syrup has been boiled enough the coating on the finger will be crisp and brittle. There may be some who will not have the courage to dip their finger into the boiling syrup; for these the next best way of testing is to drop a little on a cold plate. If this sets on cooling tolerably hard, and is only just sticky, it is done enough; if too hard and quite dry, it is done too much; and if it does not become hard at all and is very sticky, the boiling must be continued. When the proper consistence is obtained take it off the fire, place the saucepan on a cold stone and commence stirring. After a time it will be noticed that the syrup begins to lose its clear appearance and becomes opaque, owing to the granulation of the sugar. The stirring must be kept up until the mass becomes white and rather stiff, when it is ready for pouring out. The candy can be poured out into saucers, into which tissue or other very thin paper has been placed to prevent its sticking to them. When cold it will be ready for use, and can be put under the quilt just as it comes from the saucers, the flat side being placed on the frames.

If the bees are short of pollen, a substitute may be given to them, and this can be incorporated with the candy. We have always used lentil-flour, but as it is more expensive than pea-flour, the latter is more generally used, and even wheat-flour will do if the others are not at hand. One and a half pounds of the flour should be stirred into the syrup when it is taken off the fire, and when poured out into saucers and cold it will be what is known as 'flour candy.' This will be useful to the bees until the weather is sufficiently warm to feed them with liquid food. We should, however, not recommend giving bees flour candy so early in the season, and should prefer to wait at least another month or six weeks, as the probabilities are that the bees have plenty of pollen in their combs to keep them supplied with what they may require for the present. We must bear in mind that flour candy inclines to stimulate the rearing of brood, and we do not want much of that just yet, for the exertion of tending and nursing brood is exhaustive, and is apt to wear out the bees. Thus it is that at the time when we require most bees to nurse the larger quantities of brood later on we find our hives suffering from spring dwindling. If bees are fed now it should only be as a last resource and for their preservation, because the bee-keeper has neglected to do so in the autumn, but they should on no account whatever be fed for stimulation.

See that there is no draught through the hive, and by this we do not mean that the entrances should be closed so that hardly a breath of air can enter. Leave the

entrances open the full width, but see that all is close and tight at the top, that the quilt fits properly, and that there is no means of escape for the warm air by any accidental opening at the top. We use chaff round our hives, and consider it one of the cheapest and best of winter packings, and over the frames we have a sheet of unbleached calico, on which we place a chaff box. This plan we adopted in 1875, taking the hint from an American writer, and utilised for this purpose the supers we formerly used, which came in splendidly. The box has four sides 5 in. high, but has neither top nor bottom. On the bottom is tacked a piece of unbleached calico, and the chaff is poured in lightly when the box is in position on the hive. The calico is not stretched, but is a little loose, so that it may adjust itself over a cake of candy placed under it, while at the same time the edges of the box resting on the top of the hive prevent any escape of heat. This principle can be applied to any kind of hive, and we recommend it in preference to anything else as being both simple and efficient. Empty close-sided section-racks can be used, but if we were making boxes specially for this purpose we should only make the sides about 3 in. deep, as this we find quite sufficient.

MICE IN THE APIARY.

We have recently had complaints of damage done by mice in hives. They are a great pest in an apiary at this time of the year and often effect lodgments when ingress is thought impossible. They are more troublesome in proportion to the coldness of the climate. Wax is a non-conductor of heat, and besides enjoying the heat generated by the bees, the honey and pollen furnish food, and the comb a comfortable bedding. Skeps are more frequently attacked than wooden hives on account of the deeper entrances of the former. It is almost incredible through how small a space they can crawl, and yet there is no valid reason why they should get into frame-hives if properly constructed, even when the entrances are open the full width. We have always recommended long and shallow entrances, at least 8 inches long and not more than inch deep. With such entrances we have never been troubled by mice, but there are some hives in which the entrances are ½ inch or ⅝ inch deep, through which it is possible for mice to crawl. It has been recommended in order to prevent mice getting in to reduce the size of the entrance by drawing the slides closer together, but this is only a partial remedy and is frequently of very little use, as they are too knowing to be balked by such an arrangement. They are quite strong enough to push the slides aside and so get through. In such hives we should recommend the use in front of the entrance of wire net four meshes to the inch, and placing this close against the hive behind the slides so that these will keep it in position. This would not interfere with ventilation, and the holes would be large enough to allow the bees free passage to and fro.

A very simple trap was recommended some years ago in the *Journal* which we found very useful in destroying mice in the garden. It is made of two bricks and two sticks. The sticks are driven into the ground four and a half inches apart, and stand four inches above ground. A saw scarf is cut into the top of each. A piece of thread about six inches long is then drawn through a soaked pea, and a knot tied at each end. The thread is slipped into the saw-marks on the top of the sticks, leaving the pea in the middle between them, and the brick is placed leaning on the thread, with the pea sufficiently under it to ensure the destruction of a mouse if he attacks the pea, as in doing so he is almost certain to bite through the thread and let the brick fall upon him, Such a trap would cost next to nothing, and is easily baited.

THE COMING BEE.

Both in this country and across the Atlantic much attention is now being directed towards the intercrossing of the different varieties of our honey-bees with the object (as suggested by Mr. Grimshaw in his paper on 'Specialisation') of arriving at a combination possessing admirable qualities, a maximum of good points with a minimum of objectionable ones. As a knowledge of disease is half its cure, so a knowledge of what we require in the future bee will in a great measure assist us on the road towards its attainment.

In the first place, we require points in the queen which can only be recognised in her progeny, or can but be guessed at in her ancestry, as the amateur queen-raiser now proceeds to work. When a mother-bee is found, whose progeny yields him the anticipated desirable qualities, he devotes her powers to queen-raising, never thinking, it may be, that in the mating of his young queens these particular characteristics may become all changed. In time the good points become eliminated, and he is recommended to introduce fresh blood, believing at the same time he is improving the race; so he is in a direction which is not beneficial. The introducer of foreign queens of to-day certainly does not know what he is getting. Does he know what he requires? In point of fact he does not need pure races; if he got them he could not keep them pure, and they would intercross in the direction of giving him an ultimate production, having all the undesirable and few of the admirable qualities his bees should have in order to make them pay. He works by the queen, in short, instead of by the drone, and we are of the opinion that even the special queen-raiser cannot afford to do this.

By a *festina lente* process such specialists as Mr. Simmins, for example, may at length put us in possession of an insect which will in a great measure arrest the somewhat random importation of queens from countries now sending us queens of undoubtedly mixed ancestry, having, we admit, many admirable recommendations, yet these are frequently more than counterbalanced by undesirable qualities,—fickleness of temper in the progeny, constant tendency to swarm and build queen-cells, besides quite revolutionary ideas with regard to the hours of labour; bad winterers to boot, who only require a variation of a few degrees in temperature to excite them into cleansing flights at times when such a course means certain death.

We must not forget, too, that the importation of queens means the impoverishment in pocket of the bee-keepers of our own country to the benefit of those abroad; and, whatever be our individual notions on the subject of fair and free trade, we cannot close our eyes to the fact that we are morally bound, *cæteris paribus*, to support our own countrymen, who are doing their utmost to forward our science and make a living for themselves by specialising their efforts in either queen-raising or by hive, section, or foundation making.

Then, again, we are of opinion that the imported pure queen *per se* is only required by the special queen-raiser; scarcely at present by the ordinary bee-keeper, unless he

determines to destroy his native drones, and use the imported mother more as a drone-producer with the object of thus getting his young queens (and those of his neighbours) fecundated by them. Are not many of us going the wrong way to work by encouraging the production of pure young queens of foreign blood from the imported mothers, whose purity of race from a breeder's point of view is gone immediately on being crossed with the drones of the neighbouring hives? The well-known theory of parthenogenesis shows us that the drone is 'only the son of his mother,' and the only sex which can be depended on to entirely reproduce in perfect purity the commendable characteristics of his kind. The worker is, of course, an admixture of unknown points in almost every case. It is admitted that our Ligurian is only pure so long as she is purely mated. Now we only require purity, in our opinion, in order that we can impurify it, so to speak, in any particular way we ourselves desire, crossing and intermixing the good points of the several varieties at our desire; that is, if it be conceded that by judicious crossing we can improve a race—a fact in animal physiology now unquestionable, except by the most obstinate. We contend, therefore that the only safe way of doing this is by looking to the drone and not to the queen as our most important ancestor, for it is he only who is a pure representative of his parent, and who can perpetuate his species purely.

It is a well-understood fact in biology that a sex transmits its own characteristics to its progeny of the opposite sex, therefore (keeping in mind parthenogenesis), by the breeding of drones from the unfertilised queens and from fertile workers (about the virility of these drones, by the way, there is considerable doubt), but worker brood only after fertilisation. This axiom and the proof of the above assumed fact becomes doubly strong when applied to the insect world, doubly so at least with our bee—our worker bee.

The young of a Ligurian queen mated with a black drone is quite a different article from that produced by a black queen and a Ligurian drone. Precisely the same principle obtains in the vegetable world; the pollen of a white viola or pansy, fertilising, say, the ovules of a purple one, will produce seeds the flowers from which will almost certainly be purple, having a few white markings. *Per contra*, the pollen from the same purple flower used on the stigma of the same white viola gives us, as a result, flowers of white ground with purple markings,—a very different thing.

Let us imagine how a queen-raiser would proceed, if intent upon raising a variety of his own, to approach as near as possible his notion of perfection. He will, as a basis, use, perhaps, our own bee for the production of black queens, as pure(!) as they may be after the intercrossing of recent years. He next imports a Ligurian, or some select foreign queen, and compels drone-raising, destroying his black drone brood and trapping such black drones as are raised in spite of his precautions. The black queens meet Ligurian drones, which transmit the good points of the Ligurian to those possessed by the native bee, these appearing in the worker young, which do not turn out to be the terrific demons so often the dread of the incautious experimentor. Next, he will probably select an imported Carniolan queen, supply her with drone comb, carefully excise or squeeze all queen-cells (and, at any time, the queen of chance swarms will be destroyed, sold, or sent away). He thus gets a second cross containing the characteristic admirable qualities of the three races. An imported Cyprian queen gives us a third cross with the good points of all four varieties. The queen-raiser has now obtained his standard stock, which he can keep fixedly pure and fresh by occasionally introducing a virgin black, Ligurian, Carniolan, or Cyprian queen. Such a mother is not allowed to be a queen-raiser, but, as before, produce as many drones as possible, such introduction being made by the queen-raiser in exact measure as he wishes to increase or perpetuate some quality he notices to be on the wane in the progeny of his stock quality. To be able to purchase queens from such a man would be a boon, and be tenfold better than importing and introducing queens by the bee-keeper himself.

The Rev. G. Raynor, at the recent Conversazione, opened a discussion advocating the posting of young queens to friends for fertilisation in their apiaries, and, no doubt, for the amateur who desires an infusion of new blood into his apiary the suggestion is a good one; we hope, however, to see 'in the good time coming' proprietary apiaries, where only one variety of bee is kept to which their own young stock queens will be sent for mating, and even the outside bee-keeping public may, perhaps, ultimately be allowed to partake in the benefits of having such sterling stock amongst us.

USEFUL HINTS.

Weather.—'And this other likeness too
Well behoves us all to view,
Namely, that to those who eat
Honey-comb, it seems more sweet
If a man, before the drop
Of honey, taste the bitter sop.

So, it falls that all men are
With fine weather happier far
If a little while before
Storms were spread the welkin o'er,
And the stark wind East by North
Lately rushed in anger forth.'

After storms, sunshine; after a winter of extremes we shall all *rejoice* in the gentle zephyrs and the glorious sunshine of spring and summer, when—

'Emicat omnis ager renovato flore rosarum,
Et passim viridi nube vireseit humus.'

Do not those who fly to warmer climes and sunny skies, in order to escape the 'storms and stark winds East by North' of the English winter, fail to realise the full enjoyment of summer when it comes? In what country do we find the stalwart frame and ruddy countenance of the English yeoman? Where shall we find so many centenarians as in the British Isles? Where such thews and sinews as those of the Britons of olden time? We know that—

'Nottingham had archers good,
Derbyshire men are stern of mood.'

But what avail thews and sinews, skilled archers, and brave, stern men, in this scientific age of steam, electricity, dynamite, and what not? 'Progress! progress! we must go with the times. Compare the bee-keeping of the great Alfred's time—the 'Huniges taere'—with that of our own day of 'extractors' and 'extracted,'—no reflection on our supply dealers in a pecuniary sense. Now we have an extensive bee literature, witness our *Journal*, and woe be to him who neglects it, for he will assuredly fall behind in the race!

Monthly Journal.—We sincerely congratulate our cottage friends on the announcement of a *monthly Journal* in addition to the weekly, and trust that county secretaries will do their best to insure it a full, large, and all but a free circulation. Eighteen-pence per annum should supply it, inclusive of the half-penny wrapper, to every cottage subscriber of 2*s.* 6*d.* to his county Association, leaving 1*s.* to the county funds. Surely this is a step in the right direction—a step long needed; and thanks are due to our Editor for venturing on the venture. May it repay him a thousand-fold!

Out-door Wintering at present entirely prevails in England, and, in consequence, substantial, well-built, and well-painted hives are a *sine qua non*.

Cellar Wintering.—We are by no means certain

that a system of underground, or partially underground wintering, in dry and well-ventilated storehouses, would not give better results than our present method. An equable, low, and dry temperature of 40° or 45° Fahr., at which the bees will remain quiet and semi-dormant, is a necessity of indoor wintering. It may be, and we are inclined to think that it will be, the future system in all large apiaries.

Granulated Honey.—Virgil tells us that (out-door) 'hives must have narrow entrances,' and the reason he assigns is 'that winter coagulates the honey with cold, and heat melts and dissolves it.' Our present practice is to give wide entrances—as wide as the hive—both in winter and summer. When bees are crowded on as many combs only as they can cover, even with wide entrances and severest wintry weather, there may be no granulation, and there is no fear of sufficient heat being engendered to melt the sealed honey. But if the bees are not so crowded—if they cover five central frames only, and five outside frames of sealed honey—cold slabs are left in the hive, assuredly, with wide entrances, this will granulate, and probably with narrow ones also. Then comes the question, Is such granulated honey suitable food for the bees? The answer must be, No. We have repeatedly known bees to perish on such combs in the spring, even when the hives were half full of it. When only partially granulated they will consume the liquid portion and cast out the granules. But this liquid honey has become acidulated, and causes dysentery, hence in all cases of granulation it is best to remove such combs, melt them down, and feed on sugar syrup. It is quite possible that by indoor wintering granulation may be altogether avoided, and then entrances of any width may be allowed, or even the floor-boards may be entirely dispensed with. In out-door wintering our experience proves that bees winter far better in hives with double walls, and cork-dust packed, than in those with single walls; but if the latter are used, space should be allowed inside for cushion-packing outside the division-boards. Our own hives are mostly single-walled, but provided with an outer case, which admits of packing between hive and case—a system which affords great facility for tiering up, either for comb or extracted honey.

Hive-Making.—Hives should be as simple as it is possible to make them, and free from all complications, if the object be profit. We advocate entrances the full width of the hive, capable of being contracted, or closed, by the Langstroth triangular blocks; and, in actual working, we find it more convenient to cut out the entrances from the hive fronts than from the floor-boards. All hives should take at least twelve standard frames. Simplicity should also be the rule in sections and section-cases. On hives such as described we recommend impervious quilts, both for summer and winter use, whenever storing is not carried on, with entrances half an inch deep, and kept at full width, except in cases of robbing.

Stored Combs.—*Frames of comb*, and sections of empty comb stored for future use, should be occasionally inspected, otherwise moth or mice may destroy them.

Removal of Hives to other locations in the same apiary should be made without further delay. In fine weather during this month bees begin to fly freely, and great loss of life may result if removals are postponed. Get all colonies, therefore, into the positions they are to occupy during the summer, and keep the apiary clean and tidy.

Ventilation.—It is now generally acknowledged by all experienced apiarists that bottom ventilation of out-door hives in winter is a most important factor in safe wintering. We have for many years noticed that those colonies which had free ventilation at the bottom of the hive came through the winter far better than those whose entrances were narrowed to the customary one, or two, bee passages. In severe winters few of the latter survived, while we scarcely remember to have lost one of the former. But *upward* ventilation, even through chaff, should not be allowed unless the bees are crowded into the smallest possible space, when excess of moisture would seem to require pervious quilts. Accumulation of moisture must be prevented at all hazards, and we strongly recommend a space of at least four inches below the combs until spring work commences. All things considered, we are in favour of the natural mode of ventilation, viz., impervious tops, full bottom ventilation, not too much crowding, and perfect quiet and rest. Winter, let us hope, will soon be past. These notes are penned with a view to hive-construction, which must soon engross the attention of most bee-keepers in preparation for the coming season.

Virgin Queens.—We were pleased to read the very pertinent remarks of Mr. Edey (1443) in our last, on the subject of exchanging virgin queens for obtaining fresh blood. His plan of sending wired frames of comb, containing eggs of the various races, seems to us good, as well as simple, and easy of accomplishment. But we would limit it to *eggs* only, which at the normal temperature of swarming time, would suffer no injury from chill or shaking. Queen-cells, or larvæ, sealed or unsealed, would probably suffer from one or both. We like our queen-cells raised, and queens hatched in full and strong colonies, free from the smallest disturbance during incubation. In preference to sending virgin queens to a distance for the purpose of fecundation, an exchange of such queens *in toto* would obviate, in part, the introduction. This objection, however, really carries but little weight, since a virgin queen may be introduced to any queenless hive with very little risk if proper precautions are taken. Let the reigning queen be removed about noon from the colony to which it is desired to introduce a virgin queen, and on the following day at the same hour drive the latter into the hive with a few whiffs of smoke. If this method be practised during fine weather, when bees are at full work and storing honey, not one queen in a hundred will be refused. The hive must be queenless not less a time than twelve nor more than twenty-four hours—sufficient to allow the bees to discover their loss, but not enough to enable them to fully start queen-cells. There are various other methods by which such queens may also be introduced with very little risk of loss. At the late Conversazione, during a discussion on the introduction of fresh blood by the exchange or purchase of virgin queens from a distance, Mr. Baldwin is reported to have said that 'he thought the object and aim of introdneing new blood would be best served if bee-keepers would exchange young *fertile* queens'—a plan which would no doubt save trouble, and one which we have often carried out. But the advantage to be derived must depend in a great measure on the blood so introduced. We should not care to receive young and fertile queens from an apiary where in-and-in breeding had been carried on for years without any admixture of new blood. And this is a risk which we all have to run when making use of imported queens, many of which lack fecundity in a remarkable degree. If we wish to obtain a thoroughly prolific race of bees, let us breed queens from the most prolific mothers we possess, and procure fecundation at a distance from equally prolific stock. That we shall fail sometimes to attain our object there can be no doubt, but that is no reason for not using our best endeavours. From this simple practice of the introduction of fresh blood, great results have followed, and there is little doubt that still greater are in store for all who will systematically endeavour to practise it.

While closing our MS. for the press we have just seen, with unfeigned sorrow, the report of the sudden demise of our co-worker and esteemed friend the Rev.

C. F. G. Jenyns, by which our Association has sustained another severe loss. A true friend, an earnest worker, a most regular attendant at Committee, and an active member of the Board of Examiners—such a man can be ill spared from our already too greatly depleted ranks.

ASSOCIATIONS.

BERKS BEE-KEEPERS' ASSOCIATION.

The annual meeting of this Association was held at the Victoria Café, Reading, on Tuesday night, Mr. F. Cooksey in the chair, the attendance including members of the Society from various parts of the county.

The balance-sheet, presented by the assistant secretary (Mr. A. D. Woodley), showed a balance in favour of the Society of 12*l.* 12*s.* 6*d.* The assets, however, included stock valued at 22*l.* (in addition to 12*l.* outstanding subscriptions and amounts due), so that there was an actual cash deficit of 8*l.* 7*s.* 6*d.* The annual report of the committee stated that this deficit was due to a slight falling off in membership and subscriptions, while the working expenses of the Society showed no diminution. The Society was formed in conjunction with Buckinghamshire in 1879, the two counties being subsequently formed into separate Associations; and chiefly as a result of the Society's operations it was confidently asserted that where one stock was kept ten years ago ten are now kept, and that the production per hive has more than doubled, or, in other words, that for every pound of honey produced in 1879 there are now twenty. The Society's work was, however, by no means done, though in the future it would be devoted more especially to developing the use and demand for pure British honey. The Society was fettered in their endeavours by two obstacles—the undesirability of the Association undertaking the risk of traders, and the want of a means of communication between members themselves and members and consumers. At present the only bond of union was the circulation of the *Bee Journal*, which was costly, and answered its purpose very imperfectly, reaching not more than half of the members, and then only for a day or two. They had accordingly decided to consider at once the desirability of publishing a monthly paper devoted exclusively to the interests of bee-keeping in the county, and as an organ of the Association to be forwarded free to all members; and it was hoped, if this publication was decided upon, that it would be the means of strength and usefulness to the Association and that members would make full use of the opportunity it would offer them. The exhibition of honey, &c., at the Royal Counties' Agricultural Society's Show at Reading, arranged by the Berks and Hants Societies jointly, was a great success, nearly the whole of the honey staged being sold. The thanks of the Association are due to the Society and Local Committee for the handsome grants of money which enabled the show to be the carried out at little cost to the Associations. The Windsor Show was also a success, while the Faringdon Show, although a good one, was not a financial success.

The Chairman having moved the adoption of the Report, Mr. Blow gave a practical address, insisting especially upon the utility of the shows, the importance of a visit from the expert to every member of the Association, and supported the proposal to establish a paper. Mr. Webster (Wokingham) was doubtful if the paper would be a literary or a financial success, although he would like to see it in existence. The Rev. V. H. Moyle advocated its publication. The Report having been carried, the Committee was appointed; Mr. Arthur L. Cooper, of Coley Avenue, Reading and Maidenhead, accepting the secretaryship in the place of the Rev. R. Errington, of Clewer, the pressure of whose parochial duties necessitated his resignation, and Mr. A. D. Woodley, of Reading, was reappointed Assistant Secretary. The Rev. V. H. Moyle and Mr. Webster were appointed representatives to the Central Society. After other business had been transacted, the usual votes of thanks were awarded.

LEICESTERSHIRE BEE-KEEPERS' ASSOCIATION.

The annual meeting of this Association was held on Saturday, January 28th, in the Mayor's Parlour, Old Town Hall, Leicester. The attendance was rather thin, and no wonder, for the weather was bitterly cold. Mr. T. Carter, Mill Hill House, Leicester, was voted to the chair. The Report, after a short discussion, was accepted. The election of officers was then proceeded with, resulting in the re-election of Messrs. Carter, Meadows, Foxon, J. Cooper, Fosbrooke, Atkins, Johnson, Ward, Redshaw, and Rev. M. A. Thomson, and the election of Messrs. J. Clark, Shenton, Day, and Marriott, to serve on the Committee. The resignation of Dr. Emmerson's treasurership was accepted, and the Secretary directed to ask Mr. Bickley to accept that office in his stead. The Secretary was re-elected, and a gratuity of three guineas voted to him. A special vote of thanks was accorded to him and Mrs. Ball for their services.

A conversation then ensued on the best methods of bringing the Association under the notice of the public, and the conclusion arrived at that a series of lectures be given and a general meeting be held immediately after. Mr. Meadows was deputed to open negotiations with a well-known expert.

A special vote of thanks was accorded the Leicester Agricultural Society for their liberality.

The date (February 25th) was fixed for next committee meeting, and the proceedings were brought to a close by vote of thanks to chairman.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts* (see 2nd page of Advertisements).

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

VIRGIN QUEENS—CONSANGUINITY.

(*Continued from page* 48.)

[1454.] By the foregoing remarks with reference to sending virgin queens to distant apiaries to be fecundated, it is almost imperative that they should be sent in nuclei, as by such means there would be a minimum amount of trouble and risk imposed upon the receiver; but even in forwarding them thus, unless this person is expert in queen-rearing, there is a great chance of the queen, as well as the nucleus colony, being lost at the time of one of her flights, although preventive measures ought to be taken by the sender. In introducing virgin queens to a full colony no such risk is run, as an exodus of a full stock having brood is an unknown circumstance. The only casualty to be taken into account would be the one of her being alone lost on such an occasion. This is always risked by every bee-keeper at the time of the queen's desire for fertilisation; therefore it ought not to bear any weight against the present subject or argument.

I have before mentioned the cost of transit from and to the senders of a nucleus colony, which if sent by rail

would be a considerable addition to the cost of the queen. This would not be the case if a virgin queen were purchased and fertilised in the owner's apiary, as she could be transmitted through the post properly packed at the seller's expense, the same only being one penny. Looking at both sides of the question it must be quite evident to all that the plan best to be adopted in order to obtain fresh blood is that of purchasing virgin queens from known bee-keepers, if they can be obtained at a reasonable price and of the quality desired. I do not mean that only Italians should be selected as the change; any description or variety that suits the purchaser's ideas will come within the same line of argument. Even our frequently despised blacks (they ought not to be) could be renovated by these means, obtaining a queen or queens from some considerable distance of a well-known and reliable apiarist and introducing the same into the apiary. I have more specially dwelt upon the subject of Italians, as to the present time their qualities are more fully understood than any other variety of foreign bees. They have not been found wanting, as a most successful cross to our native blacks increasing the much-desired honey yield at once.

Consanguinity.—We now come to that portion of this article upon which all that I have written depends—consanguinity, or, as it is more commonly denominated, in-and-in breeding. We have not far to look to see the baneful effects of this system, which so strikingly present itself in such widely divergent subjects as man and plants. Among the lower order of animals as well as birds we see the same effect produced, in some cases in a more decided manner than others, according to the physical condition and circumstances in which the subjects are placed, hence those unnaturally fed or physically weak are more susceptible to its ill effects than are those where the constitution is physically strong and the surroundings in accordance with their various natural conditions. In my study of physiology as applied to the animal world, I have found that some birds in captivity are influenced to the maximum degree by the fourth generation. This I know is exceptional. In several experiments tried the Barbary dove was thus decidedly affected by its influence; but, in the case of some of the *Rodentia*, it was not perceptible in so marked a degree until the eighth or ninth generation, and even then was, in isolated cases, liable to variation. Not having given to botany so much attention, I cannot from my own experience write in so decided a manner upon this subject; but, from the writings of others and the collected experiences of farmers, seed-growers, and gardeners, the same effect is noted, but not quite in so marked a manner. Can we not then deduce the theory that the lower we go in the scale of living objects the less is it perceptible? The *animalcule* we know are less affected than the higher order of animals, and man commences to succumb frequently in the second generation. If, then, every living object brought before my reader's notice is so affected by consanguinity, may we not take it as an accepted fact that the *Insecta* are, in a more or less marked manner, susceptible to its influences; and as bees belong to this class, our particular attention must be, in the pursuit of the business of honey production, directed to preventive measures.

We will first note how the ill effects of in-and-in breeding are apparent in any subject that may come under its baneful influence, taking as an example the higher order of animals, and from such a description all may with a positive assurance come to the conclusion that the same effects will be reproduced in the genus *Apis*.

When mating very near relations, care is always taken that brother and sister are not so placed. This may be considered the worst form of consanguinity, and therefore even with pedigree animals it is always avoided. Father and daughter, or *vice versâ*, is a degree removed, and the ill effects are less marked, and so on as a larger proportion of extrageneous blood is constitutional in the progeny. The ill effects are first seen in a debilitated condition of the offspring. This in the case of bees, upon whose robust constitution we depend for the success of our honey crop, would be a very serious drawback—in fact, a complete failure would ensue. Afterwards, and this is the maximum effect of consanguinity, barrenness, meaning total annihilation. I do not mean to assert that an apiary in the British Islands could be annihilated through the owner neglecting to introduce fresh blood, but each consanguineous cross militates the chances of a successful venture in bee-keeping, as it does in all stock-keeping and vegetal pursuits.

When bees are located within a certain radius of each other, and in an apiary such a radius is of the same extent, and covers the same district of each of the hives as the others, the chances of consanguineous mating of the queen are extremely probable, in fact, will most certainly take place, therefore it is of the utmost importance that occasionally a fresh strain or variety should be introduced into the apiary as a preventive measure. I think I have fully shown how such an introduction can be effected at a minimum cost.

The ill effects of in-and-in breeding among bees I have in several cases witnessed in a most striking manner. Two cases in point present themselves to my mind. An old lady, living in a valley where scarcely any bees were kept, gradually obtained less and less honey each season. At the end of, I think, the sixth, her bees were a complete failure. To this person I have paid as much as 6*l.* during one season for her swarms, honey, and wax; her usual spring count was from three to five hives. There is no disease apparent in the bees; each of her hives is in a similar condition of depopulation. When she had swarms the old stocks were invariably kept until the combs got too old; I had posted her up as to the age of queens. Another case, where the bees were kept in the middle of pine-woods, with plenty of heather in the district, they gradually lost their prolificness, and so ceased to pay. In both cases, I am quite confident, it was the result of in-and-in breeding. Several less decided cases have come under my observation. When debility asserts itself in a living object it is generally considered as a fit subject for the growth of the various diseases incidental to the different organisms, although this rule is not immutable. Being so, bees in such a condition would be more likely to become sources for the propagation of the germs of diseases than when in a robust condition. This is only a common-sense view of the subject, but it is, with all the foregoing arguments and assertions, well worthy the consideration of every apiarist.—W. B. Webster.

COUNTY BEE-KEEPERS' ASSOCIATIONS.

[1455.] I venture to offer a few notes on the work and organization of County Associations, which are based on some years' active experience as a county secretary.

Work of the Association.—It is convenient to consider this in the first place, apart from the question of organization necessary to carry it out.

1. Work for the benefit of all interested in bee-keeping. In the early days of Associations this was put forward as their chief aim, and people were asked to subscribe, not merely to benefit themselves, but to help others. Accordingly, manipulations in bee tents (which for a time paid their own expenses), winter lectures, and exhibitions of hives and honey at horticultural shows, were the main items in the programme. But as Associations progressed they began to offer substantial advantages to members in return for their subscription; and at the present time probably three-fourths of the members expect (and give up subscribing if they don't get it) some direct and real advantage to themselves as bee-keepers, and are not willing that part of their money

should go for the benefit of outsiders. Accordingly, manipulations at horticultural shows (which *now* do not benefit members) should be things of the past except where committees of such shows make a grant to cover all expenses; and the other work I have mentioned should not be undertaken except where the expenditure will be balanced by a direct benefit to members, or except, as in the case of lectures, there is the hope of gaining new members.

2. Work for the direct benefit of members. This should, I think, under present circumstances, be the first consideration; but of course if it is possible (as in *b. c.* and *e.*) to benefit the general public at the same time, so much the better.

(*a.*) *Experts' Visits.*—These have become among the most important items of work, and should on no account be left out. At the same time, it is impossible, if the bulk of the subscriptions are of the 2*s.* 6*d.* and 5*s.* class, to give more than one visit to members, preferably in the spring, or for that visit to be paid at any other time than on the organized tour. The idea, chiefly prevalent among well-to-do members, that in return for 5*s.* per year they are entitled at any time to a visit from the expert, who would perhaps have to travel twenty miles and spend a whole day at the one visit, should not be encouraged. It is most desirable to obtain the services of several experts in the county, each to work within a reasonable distance of his own home; this saves expenditure in lodgings and travelling. Experts must in nearly every case be paid, and will either be hive-makers or of the upper artisan class. There should be little difficulty in securing the services of intelligent and experienced bee-keepers of this class in various districts of a county.

(*b.*) *Lectures.*—As they cost but little, the lecturer being usually unpaid, lectures should be given in as many places as possible. They benefit the general public as well as members, and often result in the addition of subscribers. Admission must be free to the body of the room. My experience, both in this and other subjects, is that the value and attractiveness of any lecture is immensely increased by the aid of the lantern and a good series of slides bearing on the subject. Perhaps it is because I have been a photographer as long as I have been a bee-keeper; but I much prefer a photograph from nature thrown on the screen to a mere copy of a wood-cut, which may show the desired details with greater 'sharpness,' but lacks the attractiveness and fidelity of the natural photograph. This, at least, is my experience from having made and exhibited a large number of slides on many subjects.

(*c.*) *Summer Demonstrations.*—In our county these have taken the place of tent manipulations. Place—the garden of any member who has frame-hives and will issue invitations. Time—6 o'clock on a June or July (not later than the 15th) afternoon. Audience—all bee-keepers within walking distance. Protection—a screen of netting surrounding the hives and lecturer. Manipulations—any practical work which may happen to be required by the hives at hand, accompanied by practical explanations on the subject.

(*d.*) *Honey Fairs.*—One central one in the chief town well advertised by hand-bills distributed by hand to every house; managed in a business-like way by a business man; no charge for admission; held on market day, if possible in the public market hall; chief object in view, *to sell honey*. Our own Honey Fair is successful; thirty members (out of 105 paying subscriptions) sent 1¼ tons of honey to the last one, and over half a ton was sold, nearly all retail.

(*e.*) *Hive and Honey Shows.*—There must be a curtailment of these, and I think it best to keep to one County Show in the year, and that one in connexion with the Honey Fair, so that members may at the same time send honey for exhibition and sale. This is one branch of work where a good deal of members' money has been spent, partially for the benefit of the public. And now, I think, it is not well to spend money in prizes at Horticultural Shows, except where a grant is received to cover most of the expense.

(*f.*) *Circulation of a Bee Paper among Members.*—A most important item of work which is all advantage to members, but rather difficult to work for financial reasons. The *Bee Journal* has been almost out of the question, so the *Record* has been utilised, but now the cheaper *Cottager's Bee Journal* will much facilitate matters.

I am of opinion that a good deal of energy has been wasted in well-meant attempts to 'help the cottager.' My experience is that the average cottager is an ungetatable individual, who, 'when he will he will, and when he won't he won't'—usually the latter; and that the best way of educating him is indirectly through the example of advancing bee-keepers around him. Cottagers' classes at shows have been a failure in their intention of stimulating improved methods, and a good many cottagers will cease to subscribe as soon as the Association fails to expend some 5*s.* or more on them in prizes, &c., in return for their 2*s.* 6*d.* subscription.

I will in my next consider the organization of Associations.—ALFRED WATKINS, *Herefordshire B. K. A.*

COUNTY BEE-KEEPERS' ASSOCIATIONS.

[1456.] The articles and letters on the above subject that have appeared in recent numbers point to the decreasing interest that is being taken in Association work by the executive of the various Associations. Perhaps, a few lines, even if pitched in a minor key, not to say in a pessimist vein, may throw some little light on some of the reasons why. Of the apparent declension in interest and working of the executive, some Hon. Secs. complain of the paucity of attendance by the members of Committee at the Committee meetings; and not without reason, for very often there is barely a quorum responds to the notice. Allow me to point out that in many instances it is a question of time and the attendant expenses causes a poor attendance. Take a case in fact. Probably, your Committee will be chosen from all parts of a large county to make it as representative as possible, and, say, the meeting is announced to take place in your county or other large town at 6.30 or 7 o'clock in the evening, an hour that suits the members of the Committee residing in, and in the immediate neighbourhood of, the town; but, probably, only a small minority are within easy distance, and the larger number reside in various parts of the county, engaged in various businesses and professions, some, perhaps, several miles from a railway (and that a branch line with only three or four trains per day). Now, probably, those country members of Committee are as anxious and as willing to attend as those living near, and have the success of their Association and the spread to profitable and humane bee-keeping as much as heart as those who, after business and living near, can always put in an appearance at the meetings. Now, the Committeeman from a distance has, most likely, to leave his home and business soon after the middle of the day to reach the town in time for the meeting, and, probably, the last train that would take him to within a few miles of his home leaves the town by 8.15 or 8.30 p.m., and the consequence is he must either leave the meeting before it is half over or lose his chance of reaching home that night, and the consequent discomfort of staying in lodgings and returning next day, with the chance of getting back again about the same time as he set out the day before. This, I think, is a very reasonable excuse for not always attending.

Then, on the other side, if the meeting is held at 2.30 or 3 p.m. to suit country members, the townsmen cannot leave business to attend. Another reason there is not

so great an interest evinced in the Association is the newness is wearing off, the new style of bee-keeping has become more general and the novelty is gone. Three or four years back my apiary was visited during the summer months by a large number of visitors for information, but during last season I had very few comparatively to what I had in previous seasons; and a still more cogent reason is the rapid decline in the price of honey, especially section honey, during the past year or two. We are feeling the depression as a body as much as any other industry, with, as a natural sequence, a diminished interest. If we could still make 1*s.* each for sections, our hopes would rise and our interest wax warm, and we should sing the praises and the profits of modern bee-keeping in as full a compass as of yore.—W. Woodley.

'WHO IS AMATEUR EXPERT?' (1448.)

[1457.] I have great pleasure in informing the Hon. and Rev. Chairman of the Board of Examiners that the 'Amateur Expert' of *The* (not 'A,' please!) *Canadian Bee Journal* is 'the original and only genuine' 'A. E.' of the *B. B. J.*

On page 713 of the *C. B. J.*, after describing 'Straw Skeps' and 'Bee-driving,' I said:—'A third-class expert has to drive a stock in this way: Capture the queen as she ascends and clean out the hive in ten minutes, or he fails to get a certificate—a feat that the examiner probably could not accomplish in ten hours. But there are examiners and examiners, and they all know when it is done well, if they cannot take the tools and show the non-successful how. Do you know the "fortunes of war?" I will tell you. "If you do or say such things you must take the consequences."'

As I *sinned* with my eyes wide open, I await my fate with calmness! I respectfully submit to my readers that I have done *some* of the examiners no injustice, and without wishing to 'add insult to injury' (?), I wish to assure Mr. Bligh that there are two opinions as to the fitness of some of those whom the 'Board' have appointed as examiners, just as there are two opinions as to 'pleasantness' of the chit-chat and the 'friendliness' of the criticisms that have appeared in the columns of the *B. B. J.* to which 'A. E.'s' *nom-de-plume* has been attached.

Our Committee in some matters 'go slow.' My quotation is from the *C. B. J.* for November 23rd. This arrived in England about the 8th of December. It has taken the rev. gentleman six weeks to sift it out and challenge it! And why after six weeks? Is it because I am at present at variance with the Committee, and have only recently given notice that I intend to carry a matter to the annual meeting of the B. B. K. A. because the Committee refuse to take what I consider a common-sense view of a very simple matter, that this question is now dragged in, on the score of 'abusing the plaintiff?'

Oh, 'A. E.,' how hast thou fallen! We had great hopes of you once; but alas! my unfortunate *nom-de-plume* is taken to task again! When Mark Twain takes his next 'tramp abroad' and calls to see me, I seriously shall have to take him to task about the iniquity of using a *nom-de-plume*. I do hope I may induce him to reform, as I may then think of reforming myself.—Amateur Expert.

DEATH TO WASPS.

[1458.] In letter [1432] on 'Fruit Culture and Apiculture,' Mr. F. Goodrich complains very much about the fruit-destroying and hive-robbing wasp. I have for the last few years lost on an average ten or twelve pounds of grapes from a large vinery by wasps; that is to say, if I did not take the trouble to bag them in muslin. But this year, having started bee-keeping, they (the wasps) tormented the bees so much I determined on destroying their nests, and the best and simplest remedy is a powder named 'Death to Wasps.' It can be had through any respectable chemist, or from some wholesale chemist in Holborn, London, price 2*s.* 6*d.* Mode of applying it is by simply putting half a teaspoonful in the entrance to the nest, and in a few hours' time you can dig out the nest and destroy the larvæ without a single sting, as every wasp will be dead. There is sufficient in one box if one is careful with it to destroy twenty nests.—J. A. A. Wood, *Watergate Nursery, near Newport, Isle of Wight, January 22nd.*

HOW TO DESTROY WASPS.

[1459.] In answer to the question asked by Mr. F. Goodrich, in his letter of January 14th, wasps may be almost entirely destroyed in any district by offering a reward of one penny for each queen killed in the spring. They will be found hunting along the hedgerows in the early spring, and can be easily caught with a butterfly-net. Boys will gladly undertake this work, and it is astonishing how soon a neighbourhood can be cleared of queens; after which you will see very few wasps, for at least one summer.—W.

BOTANICAL NAMES—HEATHER HONEY.

[1460.] As to botanical names, I suppose I did not express myself with sufficient clearness. What I meant to say was that our three late autumn honey-bearing plants were rosemary, *and* cirrhosa, *and* heather. Our almond-trees are, some of them, already white with blossoms, and the bees are having a little honey-flow all to themselves. This will last till the end of February, so that I think stimulating them is unnecessary for the present.

On the 6th of March, 1887, we transferred a few hives a few miles from here, and already found fresh combs of rosemary honey partly capped. The natives clear out the old combs from their cylinder hives about the 20th of February, preparatory to comb-building anew, so that were it not for the high winds that often prevail this would be a very fine climate for bees.

And now as to heather honey. It is considered very inferior here, and as the price would rule low, I would, like, with your permission, to propound the following:—

Query.—In a heather district where prices of honey are low—say 3*d.* or 4*d.* a pound—would it pay to set bees transforming it into wax-comb, and which would be the best method for so doing?—F. C. Andrew, *Port Mahon, Minorca, January* 11.

[To produce combs you have only to put your frames closer together, say not more than one and a quarter inches from centre to centre. The frames should have guides to the top bar so as to induce the bees to build straight combs. These guides can be pieces of comb or strips of foundation half an inch deep. You need not wait to have the combs filled with honey, but as fast as they are constructed remove them, and any honey contained in them can be pressed out and given back to the bees, preferably at night. We have had bees build comb when the frames nearly touched each other, at one inch from centre to centre, but in this case our bottom bar was only three-eighths of an inch wide, so that the bees could go up between the combs, and the frames were brought from their normal distance apart close together by degrees. We can hardly think it will pay you to produce wax if you can get 3*d.* or 4*d.* a pound for the honey. Taking it at as low a figure as 15 lbs. of honey to produce 1 lb. of wax, this would make the wax cost you 3*s.* 9*d.* a pound at 3*d.* a pound for the honey, to say nothing of the time lost by the bees while making it, which would be otherwise employed in gathering. You would hardly get half the price of its cost to you

for the wax. It is therefore very much to your advantage to sell the honey at *5d.* or *4d.* a pound than convert it into wax.—Ed.]

FASTENING FOUNDATION COMB.

[1461.] I think the difficulty refered to by a writer in your last *Journal* as to the fastening of foundation comb might be got over by making the sections with a slit along the middle of the top side, as in the bar-frames. The foundation comb could be then slipped through and turned over, dividing the lap so as to let one half turn one way and the other the other.—R. H. S.

ISOLATED APIARIES.

[1462.] In the *British Bee Journal* for January 19th, 1888 (No. 1428, page 73), Mr. Webster asks, 'In what county of England can we go where there are not colonies of bees kept within two or three miles, take any position we like in that county?' I am of opinion there is one county, and that is Hampshire in the New Forest. If he will take a ramble through the New Forest in the summer time it will repay him, for it is a lovely place for any one that has a week or a month to spare.

If Mr. Webster will start from the 'Compton Arms Hotel' at Stoney Cross, and take the main turnpike-road towards Ringwood he can have a nice walk of eight miles without finding a house along the road. The first house he comes to will be an hotel at Picked Post. After leaving Stoney Cross and walking for about two miles and a half he will come to a cross road: no finger-posts, but the road to the right hand takes him for about three miles to a gentleman's house called Broomy Lodge. There are the old straw skeps; I have no doubt: it was so fifteen years ago. If he take the left-hand road for one mile and half it brings him to Baulderwood Lodge. There, fifteen years ago, I saw about seventy old straw skeps; but it is in different hands now, so, perhaps, there are not any at all there now. Then, I think, he can get a distance of about four to five miles, and he will find several places through the New Forest of over two miles.

Let him take the Christchurch road to Lyndhurst or Lymington, he will in that direction, if he turns out of the main road through the woods, find a lonely keeper's house and the brimstone pit and straw skeps, and not any other house for miles.

The New Forest is noted for fine heather, chestnut, whitethorn, and the wild apple. I have known a swarm the first week in August gather fifty to sixty pounds of honey by the first week in October, and then done to death in the sulphur pit. How dreadful!—A. H. Miller.

UNFINISHED SECTIONS.

[1463.] How Best to Utilise the Partly-filled Sections.—In the report of the proceedings of the North American Bee-keepers' Convention at Chicago, I find the discussion on the re-use of comb built in sections to be filled with honey the next season. It is gratifying to know that the great majority of bee-keepers consider these combs of great advantage, by which they can obtain larger crops of honey, and of just as good quality, as by the use of foundation. I can hardly understand why some bee-keepers cannot obtain good honey in nice, white combs built in sections the year previous.

Some years ago it was a real perplexity to me to have a lot of unfinished sections in different states of completion, after the harvest was over, and I hardly knew what to do with them. I then tried in different ways to make use of them. Those nearly completed I sold at about half the price of sealed honey, and the rest was given to the bees for completion the next season, and of which the bees made a bad job, as some of it was granulated, and some was sour, though they fixed it all up as well as they could, and finished them; but it was horrible-looking honey, the sides of the comb was very uneven, besides being of different colours. I was almost ashamed to offer it for sale.

Using Partly-Filled Sections. — After experimenting two or three seasons more, I discovered the right way, though I think I had lost considerable before by trying to make the bees finish nearly all the sections the same season, by changing them around among the hives. This was not only lost time for me, but also for the bees, or rather less honey for me. I now allow my bees to go above toward the close of the honey season, and let them have their own way about finishing the sections: but as soon as the honey season is over, I extract every unfinished section that I have, and let the bees clean them out, when they are ready for the next season. By this method I secured just as fine honey as I do with foundation starters, and a great deal more of it; and the cases with the empty combs are nicely put away, where no mice or dust can get at them. I am glad that there are more bee-keepers who can secure nice honey with these combs, as was shown at the late Convention in Chicago; that Mr. Hutchinson had the nicest lot of honey in Chicago: and that he, as we understand, uses the empty combs.

When I was ready to sell my honey, I have never been asked, 'Are your crates and sections clean?' or, 'Are the combs from last year?' &c. No, not any of these questions have ever been asked, but invariably, 'Is your honey white?' and on this *white* the whole question turns, in selling and buying. If I have my dark honey in ever so nice combs, crates, and sections, it is slow sale, and at a far lower price than white honey: even if the latter is less attractively put up. Of course it is best to have the honey in the best marketable shape, and everything else clean, and in its proper place.—C. Theilmann (*American Bee Journal.*)

COTTAGER'S HIVES.

[1464.] In the *Journal* of January 26 I read with great interest a most instructive and detailed article on the 'Champion Cottager's Hive,' by Mr. C. N. White. The hive so designated is presumably an introduction of Mr. White's, and is, I suppose, supplied by him to purchasers. In a spirit of friendly criticism perhaps he will allow me to make a few remarks as to the construction, form, and probable cost of the hive under notice, and its claim to be considered the Champion Cottager's Hive. In his introductory sentences he refers to it as a hive adapted to the wants of those bee-keepers who may desire to adopt the modern bar-frame system at a small initial outlay, and again in almost the same breath, as equally adapted to the wishes of those who, not desiring to give up altogether the old-fashioned skep or fixed-comb hive, yet require a sort of happy medium between the ancient and modern plans, and consequently welcome a hive made of wood, square, and having a top which is fixed or moveable at will and perforated for supering. It strikes one as slightly anomalous to describe an article as capable of adaptation to two such widely dissimilar methods of management. The boxes are of the standard size it is true, but from the description it is not clear how a standard frame could be accommodated, no provision apparently being made for hanging frames of any sort. Any deviation from the standard size of frame is much to be deprecated. It is the recognised national size, and is a standard round which all British bee-keepers rally throughout the world. Every appliance-manufacturer, Association, or individual bee-keeper, should regard any infringement with suspicion, and should consider as carefully as possible an institution in the bee world of such recognised value as the 'standard frame.' At the

same time it is not intended to reject all suggestions of improvement, but discourage so-called reform which is too often a change without being an advance. A hive which cannot take the standard frame forfeits its claim to be regarded as a frame-hive.

The Champion Cottager's Hive is a single-walled hive, and is on that account to be considered as inferior to the old straw skep in point of ventilation and in interior healthiness. This, perhaps, is a matter of opinion, but in fourteen years' experience, during which I have wintered bees in ½-inch and ¾-inch single and double-walled hives, as well as skeps of all forms, I have proved to my own satisfaction that the double-walled hive with packing space is incomparably the best. I hesitate to cross swords with such a master of the art as Mr. Simmins of Brighton on any point of apiculture, but I am of opinion that double walls all round, and not on two sides only, are much to be preferred and offer no obstacle to the rapid diffusion of warmth during a spell of winter sunshine. As a medium between the ancient and modern bee domicile, one possessing some of the advantages and disadvantages of each, the Stewarton hive, holds the field against all competitors as yet, though like all the others, rather out of the reach of cottagers on account of the price. The great obstacle to the spread and development of the modern system of bee-keeping among the cottager classes is the first *cost* of the hive. The Champion Cottager's Hive first noticed, although cheaper, presumably, than any other, so far as I know at present in the market, is yet, I expect, too dear for the general run of artisan bee-keepers. When a good sound bee-hive, fitted with ten frames and a window-roof, and floor-board and cushion, double-walled, and painted, can be produced at a cost of *2s.* or *2s. 6d.*, then will it compete successfully with the straw skep at *1s. 6d.*, and make good its title to the name of the Cottager's Champion, and then will the long-hoped-for day when every cottage garden possesses a bar-frame hive be near its accomplishment.—E. J.

THE STANDARD FRAME.

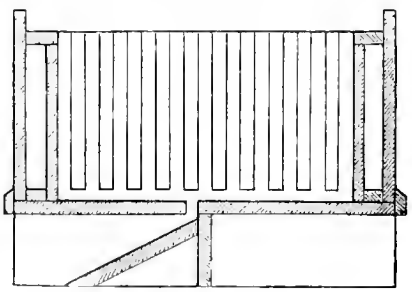
Should the 15½ Top Bar be Adopted?

[1466.] Your esteemed writer of 'Useful Hints' of Jan. 5 states his views very clearly under the above heading. There is little doubt the Committee of the British Bee-keepers' Association, who in 1882 fixed on the size of the frame and also the length of top-bar, viz., 17 inches, at that time completed a most important step for the advancement of bee-culture. The size of the rectangle of the frame—14 × 8½ outside—is all that could be desired. But I agree with 'V. H.' that this point of the length of the top bar should not be defined, and should be re-considered by the General Committee. Some of our veteran bee-keepers will perhaps say, 'On what grounds, then, do you think this alteration should take place?' It is a well-known fact that the manufacture of hives and appliances has been advanced in this way. At the annual shows of hives and honey, prizes are awarded to what the judges think the best, and the hive that gains the first place is perhaps bought by some local bee-keeper, is taken home as a pattern, and in a short time the district is filled up with the first prize hives. In 1882, and for several years later, prizes were awarded almost exclusively at our shows to hives ranging in price from three to six pounds sterling. They were most elaborate structures, 'having the most complete arrangemedts for summer and winter use, &c., &c.' At that date, no doubt, the 17-inch top bar would be the universal favourite. Within the last two years, however, matters have changed *in toto*: instead of these high-priced and ingenious hives carrying off first honours, prizes are awarded now to those that are ridiculously simple and cheap in comparison.

Competition may have something to do with this, but the main reason is that bee-keeping is getting more to be recognised as a business and less as a hobby. Should the B.B.K.A. be prevailed on to reconstitute the Committee of 1882 that fixed on the standard frame I believe they would not be unanimous now in determining the length of the top-bar at 17 inches. All that is necessary would be to allow in competition the short and top-bar equal chances, and that the size of the rectangle of the frame remain unchanged.—William McNally, *Glenluce, Scotland.*

HIVE ENTRANCE.

[1467.] I enclose sketch of new hive. There is nothing very new about it, except the alighting-board is fixed underneath on the slant. At the top of the slant a slot is cut, say, 6 in. long in the bottom-board, forming



the entrance to the hive, which I think is a great improvement on the present patterns. With this arrangement I think will be found the following advantages: Facility of hiving a swarm; bees have more control over robbers; they can come out in all weathers; young bees take an airing in safety; as the alighting-board is always dry; all dead bees, &c., brought to the hole fall out clear of the entrance. I would like some of our able bee-keepers' opinion on it, as I am only a new beginner. —W. Corkhill.

NOTES ON BEE-HIVES.—SECTIONS.

[1468.] Respecting my note upon the above in the issue of the *British Bee Journal* of the 26th inst., I have received the following letter from Mr. T. B. Blow, which I think may be read with interest by some of your readers:—

'*Welwyn, Herts, January 26th*, 1888.

'Dear Sir,—We have a patent on the thing you describe in the *Bee Journal*. We do not want to unduly interfere in the right of private individuals, but if there is any attempt to import a section with a groove all round the inside they will be stopped at the Customs. We shall be happy to send you a section to show you what it is. We may say that we shall have 50,000 in stock in a few days. We enclose you a cutting from the first proof of our new catalogue.—Yours truly, T. B. Blow.'

Upon receipt of this note I at once wrote to Mr. Blow to say I had been using a groove all round the inside of sections during the past three years, and that I had mentioned this method of fixing foundation to friends upon various occasions, viz., to Messrs. Lee, Heddon, Neighbour, Howard, Simmins, Hewitt, &c., that I had a machine for turning them out, and had been doing so for three seasons; and asking Mr. Blow to say whether Mr. Howard's description (of using grooves for fixing foundation) appeared in the *B. B. J.*, or the *Record*, prior to his attempt to obtain a patent for this object.

The first season I used grooves my finished sections were not free from pop-holes owing to the wood-corners of the one-piece sections, but I had sufficient evidence to indicate that foundation could be fixed by this method, and that it merited further trial. In 1886 I cut out the wood-corners with my pen-knife and found a great im-

provement in the finish, but cutting away part of the wood of the section spoiled the shape of the section a little. Last season I used a number of $4\frac{1}{4} \times 4\frac{1}{4} \times 7$ to the foot, four-piece pin-dovetail sections, and now prefer this section to all others. But I should here state that my hives and bee-appliances are all fitted up regardless of cost, with the object of securing the best materials and apparatus obtainable. I suppose the sections I mentioned cannot be obtained here at the present prices of ordiuary one-piece sections. I might add to my notes that I use Heddon's zinc-slotted queen-excluder, and also have a bee-space above and below the wide frames that contain the sections. I use shallow brood-cases, which are exactly similar to the surplus cases, and may be used as such, but these will require a separate description.

Some months ago Mr. S. Simmins wrote me to say he had tried grooves all round the inside of sections for fixing foundation, but it would not answer very well. I think this was owing to the sort of foundation which he used, or the style of section or the kind of section-case he experimented with.

I knew nothing about Mr. Blow trying to obtain patent rights until I received the above note. I have tried the grooves for fixing foundation in both the Glanrafon Apiary and my bee garden at Tref Eglwys. My friend Nicholas Bennett, Esq., J.P., last year, whose ingenuity I have already noted in the *British Bee Journal*, kindly made me a present of a beautiful little plane for making grooves in sections, in addition to an apparatus for adjusting the groove to the centre of sections of any width. These appliances were similar to what he was already using himself, but I should confess they were only accepted as they were more neatly made than my own. I will add that I was constrained to mention this way of fixing foundation in sections through the remarks under 'Useful Hints' in your issue of the 5th inst. I might, of course, have written at least two years ago, but I prefer thoroughly testing a thing before giving or offering an opinion. I think it is only just to state that Mr. J. H. Howard, of Holme, Peterborough, has been in frequent correspondence with myself during the past three years upon the subject of grooves for sections and frames, and has sent me several samples of sections and frames with grooves all round, together with samples of his very excellent wax-foundation from his factory at Holme. Of course if Mr. T. B. Blow can justly claim a patent right for sections with grooves all round I congratulate him. I think, however, we might as well try to patent common needles and pins as to try to secure a patent right for the above, as so many factors are necessary to secure perfect sectional honey, and as British bee-keepers are striving to create a market for this industry, free from all hindrances. I should like to add that both Messrs. Neighbour and Howard have executed some orders for me in the highest state of perfection.—T. Bonner Chambers, F.L.S. London, *Tref Eglwys, January* 27.

PARALLEL *v.* RIGHT-ANGLED FRAMES.

[1469.] It seems to me that your correspondents are making this a question of Tiering *versus* Combination instead of the above. This does not seem right to the 'parallel' side of the question, because very many ten or eleven-frame hives are on the parallel system, and thus just as suitable for tiering as any right-angle frame hive. At the present time the combination principle seems in disfavour, and if the question is confined to the use of parallel *v.* right-angle frames, the parallel will probably come out best. The majority of opinion seems decidedly to be, that (size of hives being about equal) the parallel is the most convenient to manipulate. The only opinion I have seen advanced against this is on account of the length of hive from back to front, but this is outside the question, as I have shown. The letters of 'W. R.' and 'W. B. C.' editors of the *Record*, are also outside the question because they have both taken it up as a question of combination *versus* tiering. The argument of 'W. R.' that 'every passenger has to burrow or scramble round *each* of the ten or eleven frames,' shows that he has mistaken the question. In using parallel frames for a tiering hive, here is how that argument would look. The laden bees instead of going up through the brood nest can at once go straight up the outer comb into the super. Altogether, I think this question resolves itself into one of convenience of manipulation, and I think that as such the parallel method is best.

If the question has been wrongly taken up by me and Combination *versus* Tiering is meant, please give it its right name and prevent confusion.—George D. Clark, *Kirklandhill, Dunbar.*

FRAMES.

[1470.] After nearly ten years' experience with frame-hives, I must say that for all-round purposes I prefer hives with frames at right angles to entrance. In my apiary (some 100 hives) I find the bees winter best on this system, and in the honey season the first stocks to start work in the supers are generally those with the frames at right angles. The American hives are almost all on this plan. The hives with frames parallel to entrance are, however, handy for some purposes in an apiary, and I should never entirely discard them. I find the generality of my customers prefer the parallel system. —G. Stothard, *Welwyn, Herts.*

EASY METHOD OF RENDERING WAX.

[1471.] For a while past my stock of wax odds and ends has been accumulating, because boiling down wax has always been the most disliked job in connexion with my bee-keeping, and the Swiss extractor is too expensive to be used by me. However, I have got out of the mess by the following plan which I can heartily recommend to those who have small quantities of wax. My wax was stored in a tin biscuit box. Through the bottom of this box I made a large number of small holes, then I got a dish wider and longer than the biscuit-box, and about four inches deep. This dish I filled almost full of water and then placed the tin box with wax above it, fixing the bottom of the box about an inch above the surface of the water. Then I placed both into a hot oven, and on going back an hour afterwards, was delighted to find all the wax melted and run through the small holes into the dish beneath. The dirt was all left in tin box above. On allowing the wax and water to cool I got a cake of beautifully clean wax, and with, as you will see, the smallest amount of trouble and no expense. I suppose if the combs were old and very dirty the wax might require to be run through again.

This method may have been mentioned in *B. B. J.* before, but not having seen it, I give it for the benefit of small bee-keepers. With best wishes for the success of your *Cottager's Journal*.—George D. Clark, *Kirklandhill, Dunbar.*

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

MICE IN APIARY.

Query.—I should be glad if you would advise me on the following point: In one of my hives I noticed to-day an unusual commotion, and at the entrance I found

small particles of comb. I wondered what made the bees carry out this comb, and being rather anxious about them I ventured to open the hive by lifting up the quilt. No sooner had I done so than a mouse ran out at the entrance. Suspecting this to be somehow the cause of the commotion I took out some of the frames, and you may imagine my astonishment when I saw that the combs had been nibbled away, and in one of them there was a hole more than three inches across. I followed your advice and left the entrances open the full width, but as they are only a trifle more than half an inch deep I cannot understand how a mouse could squeeze through. What do you advise me to? I have set a trap and hope to catch the rascal. I have not ventured to examine any of my other hives, but thanks to your instructions, which I have always carried out, they appear in good condition, and am anxiously looking forward to the spring when they will begin work.—A. W. B.

Reply.—Your entrance is too deep and should not be more than ⅜ths of an inch. Leave the hive alone for the present, as you are more likely to do harm than good by disturbing the bees, but we should place a piece of wire net four meshes to the inch against the entrance. For more particulars consult our article on 'Mice in the Apiary,' page of the present number.—Ed.

J. G. Snook.—*Growing Heather.*—It is quite possible to grow heather or any other hardy heath in a private garden, providing the soil is suitable for its growth. If the soil is not naturally peaty the only alternative will be to procure as much peat as is requisite and plant good, strong, established clumps of heather, which will flower the first season. This operation should be done in February or early in March in order to get the plants thoroughly established before the hot weather sets in. If our correspondent put himself in communication with Mr. H. Dobbie, Nethersett, Norwich, he would, we feel assured, be pleased to give him all the information required.

Welsh Novice.—*Shade.*—The heap you mention might be profitably utilised by planting it with borage, golden rod, and French honeysuckle, planting the two latter round the base and giving the greater part up to borage. French honeysuckle and borage may be sown and golden rod planted in March. As borage is an annual it will flower this year. 2 lbs. of borage seed and 1 lb. of French honeysuckle will be sufficient, and the remainder may be planted with golden rod and broom.

A. Caldenhead.—*Robbing.*—It is rarely that robbing begins so early as January. Are you quite sure that it is a case of robbing? If so, contract the entrance to about half an inch, and when the weather is mild enough for bees to fly, apply a little carbolic acid solution around it, and on the alighting-board.

C. A. J.—*Clipping Queen's Wings.*—The queen should be tenderly grasped between finger and thumb, in the left hand, across the thorax, and with a pair of sharp scissors the tips of both wings on the same side should be removed. The operation is very simple, but care must be taken not to injure the legs. The disadvantages are: (*a*) Bees often supersede clipped queens; (*b*) strictest watch must be kept at swarming time, or the queens, falling to the ground, will be lost. We should say that nine English bee-keepers out of ten disapprove the practice.

Kingston.—*Zinc Excluder.*—If a prolific queen with her colony is confined to eight frames under section-cases, with free access to the latter, it is probable that she will ascend and spoil sections. But much will depend on weather and income. A strong colony should have ten standard frames in the brood-nest. We are in favour of a modified Heddon honey-board (which we think Mr. Neighbour supplies) beneath supers, but by no means use plain excluder zinc laid flat upon the frames.

J. A. A. Wood.—*Pollen Gathering.*—The pollen your bees were carrying in was probably collected from the groundsel (*Senecio vulgaris*), which flowers freely in the winter whenever there is a spell of open weather.

Lincolnshire Bill.—1. *Doubling Boxes.*—The boxes will have to be made to correspond in size with the inside walls of the hive. 2. *Bee-space in Body-box.*—The bee-space is on every side of the body-box, no matter how many doubling boxes you have on. The size of doubling boxes is a matter of individual opinion. We prefer them to hold ten frames. This is the usual size, but many prefer a box of this size but much shallower, holding special shallow frames for extracting, from five to six inches in depth. 3. *Transferring Bees to Bar-frame Hive.*—Any warm day in April, but for a novice it is best to wait until three weeks after they swarm. 4. *Extractor for Loose Comb.*—Any extractor will answer your purpose if provided with a loose cage to hold the pieces of comb, this cage being placed within the cage of the extractor.

B. McD.—1. *Article on Sections.*—We have forwarded your thanks to Mr. W. B. Webster. The sheets of foundation are only fixed at the top. 2. *Spreading Brood.*—Do not attempt 'spreading brood,' it is a very risky operation even with an adept. 3. *Full Sheets of Foundation or Starters in the Brood-nest.*—In a heather district, where clover or early honey is of little or no value, we should use starters of about an inch in depth; but in other districts, where the early honey crop is a consideration, we should use full sheets.

H. M. B.—*White Super Foundation.*—The sample sent melts at much lower temperature than pure beeswax, viz., 40 F. We should not think of using it for foundation in sections, as the unmistakable odour of *Cera japonica* (earth-wax, used in the manufacture of candles) would taint the honey, and so spoil the sale of sections. We do not care for pure white foundation, the colour is not natural to beeswax.

W. J.—1. *Avoiding increase of Stock and getting rid of old Queen.*—Your plan would do. We should prefer placing swarm close alongside the stock to which it belonged until the new queen is laying well, then unite, shifting the hive that is to remain midway between where the two had stood. 2. *Patent Hives.*—There are plenty of good hives unpatented. If you are in doubt as to any particular hive, send particulars, and we will endeavour to help you.

H. J. A.—1. *Transferring to Frame-hives.*—Early in April *if* the weather is mild and bees flying freely. 2. *Getting Combs drawn out.*—Once your bees have got well to work in their new quarters you can from time to time introduce fresh sheets of foundation in the brood-nest, and if the bees are fed gently and *regularly*, they will draw same out if the weather is genial in about twenty-four to thirty-six hours. Remove that and replace with more foundation. Do not try to get too many done, as it is a considerable tax on them. Six per hive should be enough to make a good sheet for the doubling box.

W. A. T.—Your address was mislaid.

W. Robinson.—*Large Apiaries in Yorkshire.*—1, Rev. J. Challoner, Newton Kyme; 2, John Dixon, Great Ayton, Northallerton; 3, W. Dixon, Beckett Street, Leeds.

D. M.—*No.* It should be reboiled and mixed with fresh sugar. It is not sufficiently soluble for the bees in its present dried condition.

A Query.—Will 'T. H.' kindly say if he fastens the pieces of wood for keeping the frames a proper distance apart at the bottom permanently, or does he let them remain loose?—A. C.

THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

PRACTICAL WORK IN THE APIARY.

QUEEN-REARING.

'I wish Mr. Cowan would write a leaflet, or in the *Journal* give a person who has not time to work scientific dodges a plain, easy way to understand of raising our own queens from an ordinary stock of bees (from frame-hives, of course). There is so much conflicting information, a few lines from him to tell an amateur how to start and go through with it would be a great service to many.—S. J. STEVENS.'

It is quite true, as our correspondent remarks, there is so much conflicting information respecting queen-rearing that it is often puzzling for an amateur or young bee-keeper to decide on the best and simplest plan. It is often thought that as queens are to be raised from common bees, any stock will do, but no greater mistake can be made. The queen is the life of the colony, and upon having a good one entirely depends whether the bee-keeper reaps the benefit of a good honey harvest or otherwise. Every one must have noticed that there is a great difference in the behaviour of various colonies. One will with difficulty be induced to take to supers, and will persist in swarming; another will do neither, whilst others again will be noticed to be eager in occupying all the space provided for them, build combs, collect honey, and not think of swarming. If we were to allow queens to be bred from such stocks, we should gain nothing by it, but, on the contrary, be the losers. Every bee-keeper should do his utmost to improve his strain of bees, be they even the common blacks, and this he is able to do by judicious selection of the colonies from which he intends to raise his queens. The secret of success in bee-keeping is, as we pointed out many years ago (*British Bee Journal*, Vol. II., page 186), in having young and vigorous queens at the head of colonies, and in constantly replacing them as they become worn, and we are pleased to find advanced bee-keepers are now beginning to adopt this plan.

As we are strong advocates of simplicity both in hives and methods, we will endeavour to give such instructions as will enable any bee-keeper to utilise what he may possess without the necessity of going to the expense of anything special for queen-raising. Presuming that the bee-keeper has several colonies of bees, he will have spare hives, and he must provide himself with a pen-knife and a few pins. Some recommend special hives for forming nuclei, and this may be necessary when hives on legs are used, but we prefer them without, and use our ordinary hives for the purpose, which can at any time be made up to fill colonies, if we wish to do so. The inner boxes need only be used, and can have a second empty box put on the top to protect the feeder and over this a board for a roof. If the bee-keeper has only hives on legs he would do well to have a few make-shift hives, which he can easily make himself at a very trifling cost.

In selecting a colony from which to raise queens the bee-keeper must pick out the very best he has, one whose queen is in her prime and whose workers are industrious, good honey-gatherers, and not inclined to swarm. Although authorities differ on this point we prefer raising queens early in the season, so that they can have the whole summer before them, and thus enable the bee-keeper to form some idea of their good qualities before he puts them to real work the following year. The colonies we select must be very strong, and by stimulative feeding we can get the hive filled with bees and brood. All drone-comb should be excluded, frames containing any being removed, and others of worker-comb given in place of them, for this hive will only be used for raising queens, and no drones should be permitted to hatch. In this way we prevent the possibility of the queen mating with drones from the same hive, as it is obvious there would be none, since we have excluded all drone-comb and thus have prevented their production. In this manner we prevent that in-and-in breeding which is so detrimental if queens and drones are raised in one hive.

We commence by placing a frame of clean, empty worker-comb in the centre of brood-nest, which will be filled with eggs by the queen. Three days after this the queen can be removed, as well as any frames containing uncapped brood, except the one we introduced, and which now contains eggs. We remove the uncapped brood because we wish to make sure that the grubs, which are to be used for raising queens, receive the proper attention from the first. We have always insisted strongly upon this point, and have had ample evidence in our long experience of raising queens to prove that our practice is right.

Without entering deeply into the theory of the question, it is sufficient to say that it is based upon the discovery of Leuckart that the larvæ of workers were weaned after the third day, by the gradual addition of pollen and honey to the food supplied them by the nurses; whereas those destined for queens receive the same food during the whole of their larval existence, without any admixture of pollen or honey; and further, that this brood food is administered in greater abundance.

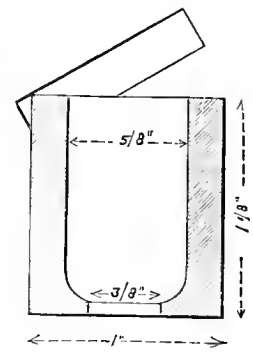
The bees will commence queen-cells, and we can assist them by enlarging the mouth of any particular cell we wish them to start upon, in such a way as to break down the walls of the adjoining cells, especially those beneath.

We generally cut off the edges of the comb, and get our cells started along these. They then usually hang down, so that they are more easily cut out. A large number will be constructed, and if we do not require

them all the earliest ones are selected, and the others destroyed. The bees should be gathering both honey and pollen in quantity when the cells are started and until they are capped over, otherwise they must be supplied with food artificially. In about eight or nine days from the time the queen-cells are started the bee-keeper will be ready to form his nuclei. We always use our ordinary hives for this purpose, and for several reasons do not recommend the small boxes sometimes used. The nuclei can be made up from any of the other hives having young bees. Two frames containing brood and honey will do for a nucleus, but three frames are better, because if these are well covered with bees the hive would be warmer, and there would be less risk of chilling. In taking the frames out of the hives take care not to remove the queen with them. Place the frame in the hive close up with division boards, and as all the old bees will return to the stock hive, shake or brush the young bees from one or two other combs into the nucleus, so that there should be as many as could well cover the frames, and be able to maintain the proper temperature. In this way form as many nuclei as you have cells to introduce. We then on the next day with a very sharp knife, cut out the queen-cells very carefully, so as not to damage them in the slightest degree. If the bee-keeper is not very proficient at this sort of work he had better cut out one cell at a time, and return the frame from which it was taken to its position in the hive until the cell is inserted in its place in the nucleus. There will then be less chance of the inmates being chilled or the cells damaged. In cutting them out leave a small piece of comb attached to each cell, and by this pin it to the side of one of the combs with its point downwards. The next frame is brought close, so that the cell hangs down between the two combs without touching them, they only coming in contact with the piece of comb attached to the upper part of the cell. The space is then closed up by the division board, covered with the quilt, and the bees fed gently with syrup. The nucleus must be watched to see if sufficient bees remain, and if too many leave give them more in the way already described. In from three to four days the queen will hatch, and in about a week or ten days after she will become fertilised. Before the queen leaves the hive for fertilisation, remove one of the combs, and replace it by another containing brood. Unless this precaution is taken, and there is brood in the comb, the whole of the bees may leave the hive with the queen when she goes out to meet the drones, and so there would be a chance of losing all. If brood, however, is given them, they will remain in the hive, because bees very seldom desert young brood. The queens may be left in these nuclei until they are required.

We have described the plan we prefer and have found the simplest and most successful (see our remarks in *B.B.J.*, 1883, page 2, Vol. XI.), but as an alternative one, some bee-keepers recommend instead of removing the queen from the best hive, and having the queen-cell started in it, to get the queen to lay eggs in some clean worker-comb, and then give the frame containing this to another hive. Of course the queen of this hive and all uncapped brood should be removed so as to make sure that the queen-cells will only be raised from the eggs we have introduced. Some bee-keepers introduced the queen-cells in a cage, Mr. Doolittle using one of wire; but the simplest thing in this way was one we saw in our journeying in America, and is used by Captain Hetherington. It consists simply of a block of wood $1\frac{1}{8} \times 1 \times \frac{3}{4}$ in., having a $\frac{5}{8}$ in. hole bored down to within $\frac{1}{16}$ in. of the bottom, and here the hole is reduced to a little under $\frac{3}{8}$ of an inch. The queen-cell is introduced into this, the point projecting below, and the tin lid closes the opening above. We give an illustration of this cage in section, so that the merest tyro can make one himself. It is placed between the combs, is kept in place by them, and the bees are not able to destroy the cell if they are inclined to do so, but such an incident has rarely happened to us in introducing the cells in the ordinary way.

So far we have only considered the raising of select queens, and if we do no more than what has been described we must take the chance of our queens mating with drones from any other hive. But we can go a step further and select our drones. For this purpose we select our next best colony and use it for drone production. This hive must also be stimulated so that it is well filled with bees and brood on most of the comb. When we find this to be the case we remove one or two of the brood-combs from the middle of the hive and put in their place frames containing drone-comb. By feeding more rapidly the queen fills the drone-cells with eggs which will produce drones. As soon as the drones begin to hatch out it is just the right time to start the queen-cells in the other hive, so that when the young queens are ready to fly the drones will be in a condition to do so too. To further ensure a better chance of success we should prevent the production of drones in all our other hives, and have none others in our apiary but the selected ones. In this way queens are raised under the most favourable conditions, and are far superior to those started in nuclei with a small lot of bees, a plan frequently adopted by queen-breeders. Of course, by adopting this plan we must run the risk of the queen mating with drones from a distant apiary. Where a large number of queens are required the plan may be varied a little; but a description of this must be deferred to a future article, as well as the methods adopted for insuring fertilisation by selected drones.



SIMMINS' BEE COMPANY, LIMITED.

We are now about to have the question, Will a Bee Farm in England pay? put to a practical test, and we are sure our readers will concur with us when we say the first venture in this direction could not be confided to a more honest experimenter and withal a more competent man, than our respected correspondent Mr. Samuel Simmins of Rottingdean. During recent years he has attained a very prominent position as a queen-breeder; and we may say that having personally inspected his Rottingdean and Balsdean Apiaries it would be impossible to conceive places better adapted for this most interesting pursuit. In whatever direction we looked we found evidences of much thought and careful consideration. Mr. Simmins will continue to manage the affairs of the Company, it having purchased the sole right to use the name of 'SIMMINS' in connexion with bees, honey, and appliances, for the next twenty years.

Were bees and honey the only articles on which the Company proposed to rely for profit we should have some doubt as to its ultimate success; but as queens and appliances are to form a very considerable portion of the Company's business, thus utilising all hands during winter as well as summer, there seems to be no tangible reason why success should not crown their efforts.

We shall look forward with considerable interest to the first balance-sheet, when we hope to be able to congratulate the Company on having shown that there is money to be made by the development of our especial hobby into a national industry. In the meantime we have great pleasure in expressing our good wishes towards the Company, and our earnest desire that it may eventuate in success.

In Memoriam.

THE REV. C. F. G. JENYNS.

It was with a peculiar thrill of pain and regret that we read the concluding paragraph of the 'Useful Hints' of last week announcing the sudden demise of the Rev. C. F. G. Jenyns, Rector of Knebworth, Stevenage, Herts; and all who were acquainted with the deceased will readily join in the warm eulogium therein pronounced of his sterling worth and of his earnestness in the cause of bee-keeping.

The Rev. F. G. Jenyns was born on November 13th, 1827. He was educated at Bury St. Edmunds, after which he entered Emmanuel College, Cambridge. He there took a great interest in athletic sports, especially in boating and cricketing. He was in the College boat and in the University eleven. After leaving College, he obtained a curacy at Melbourn, Cambridgeshire, under the Rev. Mr. Selwyn, Professor at Cambridge. After serving the curacy for two years, he was appointed vicar of the same place, and here he remained twenty-one years. In the year 1874 he was collated to the rectory of Knebworth, Herts, the home of the family of the Bulwer-Lyttons, where he has been for the last thirteen and a half years. In the year 1856 he married Miss Rose Emily Bulwer, and leaves three sons and two daughters to deplore his loss. He died very suddenly on the 26th of January, and was buried on the 1st of February. The Committee of the British Bee-keepers' Association was represented at the funeral by Captain Bush, R.N., and the Rev. J. L. Seager; and amongst others present the following bee-keepers were noticed, Mr. J. P. Sambels, Mr. T. B. Blow, Mr. G. J. Buller, and Mrs. Maynard. The gentry from far and wide gathered to show their respect; and, notwithstanding the extreme severity of the weather, many ladies were present. In the neighbourhood of Stevenage there was probably no one more highly respected by all classes. He was a man of wise judgment and of great sympathy and kindness to all, both high and low. As a parish clergyman he had done a valuable work both at Melbourn and at Knebworth.

Mr. Jenyns joined the British Bee-keepers' Association in 1879, and was elected on the Committee at the election of 1884, since which time he has taken an active part in the work of the Association. He was conspicuous by the regularity of his attendance at the meetings, and by his impartiality as a judge.

In August 1884 he entered with great spirit into the controversy raised, in the *Times* newspaper, by the Hon. A. F. Leveson Gower, as to the position of bee-keeping as an industry in England. Mr. Jenyns' letter on that occasion was a valuable addition to those that were elicited from other advanced and experienced bee-keepers. His letter more especially embraced the work that had been performed by the British Association since its institution. The most interesting point was the means adopted to ensure that those employed as experts should be competent to instruct cottage bee-keepers at their own homes and in their own gardens.

Mr. Jenyns ever showed much interest in the educational aspect of bee-keeping, and at the quarterly Conversazione held on July 23rd, 1885, he read an interesting and exhaustive paper on that subject. In this he argued that bee-keeping should be introduced as a 'class' subject to elementary schools, and endeavoured to prove that as the tendency of bee-keeping is to make the man, so also it would educate the child, to be observant and accurate, to be prompt, ready, and provident, and to be kind to God's creatures and attentive to their wants. His great aim was to make the study of bees and intelligent bee-keeping truly educational, and his earnest desire was to ascertain how that study could be most profitably promoted. And the conclusion he arrived at was that the Educational Department should move in the matter, so that bee-keeping should take its place as a subject in elementary schools; and not in those only, but also in the great middle-class schools and in the agricultural colleges of the kingdom—not merely as an educational subject, but as a profitable national industry.

At the instance, and under the auspices, of the British Bee-keepers' Association, and in continuance of the previous studies of Mr. Jenyns, he was induced to compile a work, entitled *A Book on Bees, their History, Habits and Instincts*. This was published in the beginning of the year 1886, with a preface written by our President, the Baroness Burdett-Coutts. This work was a valuable and welcome addition to bee-literature, the chief object of the work being to make bee-keeping interesting to young readers. Mr. Jenyns was most successful in the object he had set before himself. The work bore clear evidence of his special aptitude for making his subject interesting and intelligible to the young. Its style was lucid and simple, and the interest of the book was maintained from the beginning to the end. We consider that the work is a model of conveying instruction on the habits and structure of the bee. A cheap edition of the book has been since published, with a view to its introduction into elementary schools.

Mr. Jenyns evidently considered that his special mission was to interest the young in favour of bee-keeping, and therefore we were not taken by surprise in finding that at the Conference that was held at the Indian and Colonial Exhibition in connexion with the South Kensington Show, he selected as the subject of the paper he there read, 'The Promotion of Bee-keeping amongst the Young,' in which he strove to show that if we desire to promote bee-keeping amongst the working-classes, 'we shall do well to sow the early seed, which may afterwards bear fruit and so lead to intelligent and profitable bee-keeping on a much larger scale, and on a much wider field, than we had seen hitherto.'

We are indebted to Mr. Jenyns for the idea of 'local advisers,' the judicious carrying out of which has proved of such service to County Associations. Mr. Jenyns has officiated as judge on several occasions. The last time he occupied that post was at the Royal Agricultural Show at Norwich. He was one of the party who escorted the Princess of Wales and family through the Bee-department on that occasion. He was a member of the sub-committee for conducting examinations, for the duties of which he was eminently fitted. As Hon. Sec. of the St. Albans Diocesan Board of Education he possessed considerable knowledge of educational questions. Mr. Jenyns was also a great rosarian, and a painstaking recorder of meteorological facts.

In losing Mr. Jenyns we have to deplore the loss of not only one of the best and most successful of bee-keepers, but also of one of the most true-hearted and kindest of men.

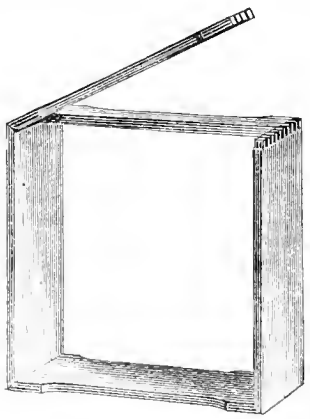
'EXCELSIOR' BEE-FEEDER.

We have received from the Co-operative Tin-plate Workers' Association one of their 'Excelsior' bee-feeders. In this feeder there is an inside circle, where the bees come up to the syrup-holder or tank. The syrup is conveyed from outside of the feeder by a tunnel. Inside of the syrup-holder is placed a cork float, which the bees get on to feed; there is also a bee-space between the outside circle and syrup-holder, the whole extending over six frames, and the spaces on each side of the frames

covered with a 9-inch circle of glass. When not in use for syrup or dry sugar, candy can be placed in the syrup-holder (and also on top of the frames as recommended in 'Modern Bee-keeping' and other works), and around the syrup-holder, and a quilt over the glass. On removing the quilt the bee-keeper can see what stores the bees have. If candy is required, the bee-keeper has only to take a penknife and lift up the glass and place the candy on. This feeder seems to be appreciated by the bees, if numbers be any criterion to go by. It is the warmest place in the hive, giving the bees air-space and a place for exercise.

A NEW METHOD OF FIXING COMB FOUNDATION.

Ever since the introduction of sections there has been wanting a better method of fixing comb foundation than is at present known. Messrs. Abbott Bros., in trying to meet the want, have invented a method (simple, but efficient) that leaves nothing to be desired. One glance at the little wood-cut will explain the whole thing; it is so simple that one wonders it did not occur to everybody years ago. The top of section is cut at an angle, with a cutter which leaves the top of cut larger than the bottom,



thus forming a dovetail for wax when inserted. The cut being left at an angle, and the right-hand half of the section being still unfolded, enables you to put the foundation in without the least trouble, then by closing the top half of section down into its place, a perfect tightening pressure is formed, which forces the wax into its place. Sections can be folded and waxed by this method at the rate of twelve a minute, no appliance whatever is required. We understand Messrs. Abbott Bros. have patented this new invention. (*See Advt.*)

ASSOCIATIONS.

LEICESTERSHIRE BEE-KEEPERS' ASSOCIATION.

Annual Report.

Your Committee feel that they may very well commence their Report for the year 1887 with hearty congratulations, since the honey season in most parts of the county has been an exceptionally good one. The fact that one member (Mr. W. Brutnell, of Goadby Marwood, near Melton Mowbray) lifted 215 lbs. from one stock alone, clearly shows that Leicestershire possesses honey-producing capabilities favourably comparable with almost any county in England.

The annual show was held at Ashby-de-la-Zouch. There was, as usual, a good show of honey, the bulk of which was of first-class quality, but the number of exhibits was smaller than in the preceding year, probably owing to the difficulty of reaching Ashby from some parts of the county. No prizes were offered for collections of bee-keeping appliances; nevertheless, Mr. W. P. Meadows, of Syston, Leicester, and Mr. C. Redshaw, of South Wigston, exhibited their complete collections for the benefit of the Association. For this act of liberality your Committee here accord them special and hearty thanks. The medals and certificate of the British Bee-keepers' Association were awarded as follows:—Silver medal, Mr. W. P. Meadows, Syston; bronze medal, Mrs. Ripon, Waltham; certificate, Miss Chester, Waltham. The judge, Mr. J. M. Hooker, was appointed by the British Bee-keepers' Association. He examined Mr. Windsor, of Netherscale, for third-class expert's certificate. Mr. Windsor's success has since been recorded in the *British Bee Journal*.

A second show, by kind permission and pecuniary assistance of the Corporation Committee of the Abbey Park Horticultural Society, was held in Abbey Park on August 2nd in conjunction with that Society. Acknowledgments are due to Messrs. Carter, Meadows, Clarke, J. Cooper, and others, for the able manner in which this show was managed.

It is hoped that the Abbey Park Committee may see their way to giving a larger grant to the Association, to enable it, during the next season, to carry out the arrangements more efficiently, and induce the members to take more general interest in the Show.

At a Committee Meeting held in May, it was resolved to employ an expert. Mr. George Munday, of Rutland Villas, Cavendish Road, Aylestone Park, Leicester, was appointed to visit the apiaries of the members in the spring. As a result, fifty new members were added to the Association. The expenses, unfortunately, more than covered the additional receipts, so that other arrangements for an autumnal visit had to be made, which it is hoped were little less effective. Mr. Munday visited 1250 hives, and as a large number of these were of modern make and under the modern system of management, there can no longer be any doubt of the beneficial influence of the Leicestershire Bee-keepers' Association. Furthermore, Mr. Munday saw large numbers of similar hives under the capable management of bee-keepers who still hold aloof from the Association, but who, nevertheless, must have derived, and be still deriving, considerable benefit from the teachings of the Association.

The Association has determined to send round an expert in the spring to visit members' apiaries. It must, however, be understood that the expert will not be able to examine more than two or three hives in each apiary, his time being limited; but he will give advice and information on special points if required. The services of the expert can be obtained at other times by special arrangements with him, with regard to payment for his time and travelling expenses. The address of the expert at present employed by the Association is Mr. George Munday, Rutland Villas, Cavendish Road, Aylestone Park, Leicester.

The condition of the finances of the Association is not very encouraging, nor is it very discouraging when it is borne in mind that there have been the extra expenses of the expert's tour and Abbey Park Show. Your Committee once more ask assistance in clearing off the debt. It may be here recorded that Mr. Bickley, to commemorate the Jubilee, offered to pay one pound towards liquidation of the debt, if nine others could be found to do the same. Are there any members still disposed to respond?

A larger number of exhibitors is very desirable. Intending exhibitors are requested to read the rules over very carefully. Competitors exhibiting for the first time are especially asked to give a little attention to the 'Hints to Exhibitors.'

OXFORDSHIRE BEE-KEEPERS' ASSOCIATION.

The annual meeting of this Society was held in the Clarendon Hotel on Wednesday afternoon, January 25th.

Lord Jersey presided, and there were also present: Revs. F. C. Dillon (hon. sec.), C. Sturges, Williams, and Neames; Messrs. Hitchman, Launchbury, Hancox, Cobb, Perry, Hayes, Taylor, Scrivener, Thomas, C. B. Anstey, Thomas, Hughes, C. Harris, &c. One lady bee-keeper was present.

The Secretary read the balance-sheet, which showed 6*l.* 15*s.* 10*d.* to the good.

The Secretary read the following Report:—'Your Committee beg to present their sixth annual Report. They regret to find some falling off in the numbers of the Society, though in other respects its position appears very satisfactory. Fresh ground has been opened out by the circulation of the *Bee Journal* among the members, and the balance, thanks to the generous support given to the prize fund, is more favourable than it has ever been before. Under these circumstances your Committee trust that the work of the Society during the coming year will be effective, and result in bringing in a considerable number of recruits. The number of subscriptions received for 1887 was 116. Of those twenty-three were new members or old members whose names did not appear in the last report owing to their subscriptions not having been paid before the general meeting. As there were 136 last year, there are, therefore, forty-three members who have not yet paid for 1887. No doubt some of these losses are unavoidable, but your Committee hope that some may still be disposed to continue to support the Association. The Bee-tent of the Association does not seem to have been in as great request as in former years. No doubt it would be more sought after if the secretaries of flower-shows knew on what very favourable terms it could be secured, and they would, therefore, suggest to members and local secretaries that they should make its existence known to the secretaries of the flower shows in their neighbourhood and districts. It visited the following places last year, viz., Banbury (two days), in connexion with the Oxfordshire Agricultural Society; Headington, in connexion with the Church of England Temperance Society Fête, when the Association also held their annual show: and Swincombe. The spring tour was taken by Mr. Perry, and the autumn tour by Mr. Fewtrell. It will be of great assistance to the Secretary, and save disappointment to members, if those who wish the experts to visit them, would be careful to send in the forms by the dates mentioned. The annual show was held, as stated, at Headington, in connexion with the Church Temperance Fête, on July 14th. The Committee were much disappointed in the number of exhibits sent, there being only forty-one entries. This was partly due, no doubt, to the fact that the great show of the British Bee-keepers' Association was being held at the same time at Newcastle. In the honey class, there was a very good display in Nos. 3 and 5 for 1-lb. sections and extracted honey, but No. 4, for best supers of honey, found very little favour. Should it be decided to hold another show this year your Committee hope that members will do all they can to secure as many entries as possible. In accordance with a resolution passed at the last general meeting, copies of the *British Bee Journal* have been sent to each of the local secretaries for distribution among such members of the district as apply for them, and your Committee have reason to believe that this additional privilege has been much appreciated by many of the members. The hope expressed at the last meeting that some gentleman would come forward and undertake the post of local secretary for those districts which did not then possess one, has been realised, and the Committee are glad to be able to report that there is now a local secretary for each strict. In conclusion your Committee think that the tisfactory state of the balance-sheet justifies them in commend ing the appointment of an assistant secretary a small yearly salary. The Hon. Secretary is willing continue at that post, provided an assistant be found; and your Committee are glad to report that Mr. C. Harris, who has previously held the post of local secretary for Oxford district, has consented to be nominated as assistant secretary. The Committee are confident that in him the Association would gain a most intelligent and energetic officer, whose work would soon make itself felt and bring a good return to the Association.'

Lord Jersey was re-elected President, the Rev. F. C. Dillon (Vicar of Enstone) Secretary, and Mr. C. Harris assistant secretary.

The following form the Committee for the year:—G. H. Morrell, Esq., Dr. Boyton, and Messrs. Salmon, C. Taylor, Crute, C. B. Anstey, C. Smith, and R. P. Thomas.

YORKSHIRE BEE-KEEPERS' ASSOCIATION.

The Annual Meeting of the Yorkshire Bee-keepers' Association was held at the Church Institute, Leeds, Jas. Dodgson, Esq., Skipton (Hon. Sec. of Craven Branch B.K.A.) in the chair. The usual official business was transacted and the accounts passed. The Committee regret to have to report to you the resignation from the Honorary Secretaryship of G. H. L. Rickards, Esq., who has so courteously and ably filled the position since the formation of our Association; the reasons given for this step being, that owing to the march of time our esteemed official did not feel himself able to do as much as he would like to forward the cause we have at heart, *i.e.*, the growth and prosperity of our County Bee-keepers' Association. Suitable remarks thanking Mr. Richards for his past labours, &c., were made by the Chairman and others, and a resolution was carried unanimously electing him an honorary member of Committee. Resolutions respecting the attendance of the Committee, &c., were passed, and interesting information as to the foundation of Branch Associations was given by Mr. Dodgson.

Mr. R. A. H. Grimshaw, of Horsforth, near Leeds, who was elected a year ago Co-secretary with Mr. Rickards, now remains the Hon. Sec. of your Association; and in presenting you with the annual report, he hopes he will receive the same kindly help given to his late colleague. He asks also that the sympathy and support of all who are interested in advanced bee-keeping be extended to the Yorkshire B.K.A., and especially does this appeal relate to those with whom the fruit and fodder-yielding capabilities of this 'county of broad acres' are subjects of importance. To these, amongst our friends, it is almost unnecessary to enlarge upon the enormous benefits silently conferred upon the community by the honey-bee as a plant-fertiliser (and, therefore, as a seed and fruit-producer), apart from its labours as a honey-producer.

During his year of office as Co-Secretary, Mr. Grimshaw has delivered six lectures (three at Leeds, one each at Ulleskelf, Badsworth, and Walton, near Liverpool).

LANCASHIRE AND CHESHIRE BEE-KEEPERS' ASSOCIATION.

Annual Report.

In presenting the sixth Annual Report your committee are glad to say that in place of a debit balance they close the year with a small balance to their credit.

The shows that have been attended during the year 1888 are:—July 21st, Prescot and District Horticultural Society; August 4th, St. Mary's Floral and Horticultural Society, Chester; August 20th, Huyton and Whiston Cottagers' Horticultural Society; August 24th, Lancaster and District Floral and Horticultural Society; August 31st to September 3rd, Royal Manchester, Liverpool, and North Lancashire Agricultural Society, held at Old Trafford. The only one calling for remark

is the Show held at Old Trafford under the auspices of the Royal Manchester, Liverpool, and North Lancashire Agricultural Society, and your committee feel that the support of this Association should be given to this Society as the readiest means of increasing the usefulness of the Bee Association in the two counties. They have, therefore, made an offer to attend the Show of the Royal Manchester, Liverpool, and North Lancashire Agricultural Society, to be held at Lancaster in 1888, provided the Agricultural Society meet your Association with a grant. In making their report to their subscribers, the Agricultural Association refer to the assistance rendered them by your Association.

Of the 238 members referred to in the report for 1886, 19 have resigned; 63 have joined, leaving 282 members' names on the books, including 67 in the Artisan and Cottager List.

Your committee during the year have tried to work in conjunction with the Sandbach, Hawkshead, Poulton-le-Fylde, and Altrincham Associations, but no arrangements have been come to.

Your committee early in the year secured a room at 2 South John Street to meet in; this has proved very convenient.

The plan of having local secretaries has been found to work to the advantage of the Association, but many more are wanted throughout the two counties, and your committee ask the co-operation of members, so that no part of Lancashire and Cheshire may be further than five miles from an active local secretary.

The lectures given by Mr. Webster, of the British Bee-keepers' Association, in the spring, opened up a great deal of fresh ground to your Association, and will doubtless bring in fresh subscribers next year.

By the kindness of Dr. Walker, who is one of the examiners from the B.B.K. Association, candidates had a chance of getting third-class certificates at the time of the Show held at Lancaster; the two candidates who came for examination obtained certificates. With reference to this subject, your committee are glad to learn the Committee of Examiners of the B.B.K.A. are trying to arrange to make it easier for candidates to meet them; and it will greatly assist all parties interested if candidates for 1888 will send their names to the secretary by the end of June, or earlier where it is practicable.

On the recommendation of your representatives, the B.B.K.A. have arranged that county representatives shall meet an hour before the Conferences, so as to discuss and arrange for all matters of interest to County Associations to be brought authoritatively before the Committee of the B.B.K.A.

A large quantity of honey has been sold for members, and had more been sent it could have been readily disposed of. What is chiefly required is an attractive form of putting up, at popular prices, say—Jars at 1*s.*, 1*s.* 6*d.*, and 2*s.*

Foul brood being on the increase, your committee, early in the year, had phenol solution put up in a cheap form, but it was called for much more outside your own counties than in them. Members would do well to make very strict inquiries before purchasing any bees, and in every case the inquiry should be made whether foul brood exists at the apiary from whence the bees are bought.—Wm. Lees McClure, *Hon. Sec., The Lathams, Prescot, 31st December*, 1887.

Correspondence.

OUR HONEY IMPORTS.

The value of honey imported into the United Kingdom during the month of January, 1888, amounted to 467*l.* [From a return furnished by the Statistical Department H.M. Customs to E. H. Bellairs, Wingfield, Christchurch.]

THE MONTHLY ISSUE OF *BEE JOURNAL* AND ITS ADVANTAGES TO BEE-KEEPERS' ASSOCIATIONS.

[1472.] I felt quite elated when I first heard whispers of there being a likelihood of the *B. J.* being issued in a form more compatible with the financial requirements of bee-keepers' Associations. For some considerable time past it has been the privilege of members of Associations to have sent them for their perusal (a time usually extending to from two to three days) a copy of the leading British journal in apiculture; but the difficulty of transmitting same from member to member soon became apparent, and for some lengthened period quite a failure in its distribution has been the result.

The *B. B. J.* at its weekly price of twopence was much too expensive for the Associations to send a copy gratis to each of its members, but the advent of the condensed yet practical stranger seemed all at once to relieve us from the cloud of failure, experienced with its more imposing congener.

There is little doubt that Associations will at once feel the great advantage thus conferred upon them, especially so if the practical portion only of the *B. B. J.* is transferred to the columns of its monthly echo. It is what the cottager or other bee-keeper requires; the right nail has been tapped upon its head, and now I trust to see it in a few months driven fairly home.

Many would-be members of B. K. Associations want to know what benefit they are going to derive from joining; if it can be pointed out to them that each month they will receive gratis for their own several uses a periodical devoted entirely to apiculture, they will be satisfied that a large amount of good will accrue, and then a visit or visits from the expert, free admission to all shows, meetings, conversaziones, &c., being added, their natural dislike to 'part' for a seeming myth will be overcome, and Associations will thus receive an impetus not felt for some considerable time past. Let us hope that these sanguine expectations of mine will be realised. I think they will.

Taking as a basis my own County Association (Berks) it will be found that for a not very significant amount above that paid for the weekly issue, the monthly *B.J.* can be sent post paid to each of its members to become their property for present use or reference. Unfortunately a few of the members of the committee of the Berks B.K.A. do not or will not see it in this light, they must have a journal of their own, although at the present time the funds are not in the most flourishing condition. A bee journal of their own, they say, will lessen the printers' bill. So it will, but not sufficiently by far to pay for a journal being issued from their own press of equivalent interest or such practical advantage as *the Journal*.

You, Mr. Editor, have the whole of the British Islands to draw your supply of 'copy' from; a county can but have a fractional portion of it, and a consequent diminution in its utility. Berkshire, I am aware, locates a goodly number of practical bee-keepers, but how many of these, although they may be stars in their profession, have the natural aptitude of imparting that knowledge in writing to others?

You have the control of numerous writers, men who have made their mark, more or less, in apiculture with the pen. Can any County Association obtain this control unless their funds are augmented to a condition far above any bee-keepers' Association at the present time? They cannot. Can they expect a man to expend his ideas in the columns of their paper, who, if these same ideas and writings were sent to another periodical, would command a marketable value? It is not a common-sense view to suppose they would. As a result, the matter produced in its pages will have to be obtained at the nominal sum of—nothing. In a bee journal, no matter how simple its

contents, it must in many practical articles be illustrated. Can they get draughtsmen and engravers to form these blocks for nothing? Will an editor (poor man!) work transcribing copy badly written, orthographically deficient, or almost in a state of printers 'pie' for nothing? You know, Mr. Editor, there is plenty of that sort of 'copy' sent in.

Philanthropy, I know, is a trait to be encouraged, but in these days of £ *s. d.*, where each of us has to look around for the wherewith, few can be found to work day after day, night after night, without its equivalent in some form or other; and so, if the quality of the matter contained in this embryo journal is to be kept up to the standard, the promoters will assuredly find out.

By the articles of affiliation to the British Bee-keepers' Association the annual reports of Associations have to be produced to a certain standard size (ordinary 8vo.), that the different reports may be bound together in one volume; this journal, though of a different size, is to produce this report in its pages, and great satisfaction was expressed by the promoters that the item of a separate report would not have to be paid, as the first number issued could be almost filled with the same; rather dry reading for its recipients, and scarcely to be recognised as of practical advantage in the establishing or successful management of an apiary; therefore, as this must appear in the March number, would-be manipulators will have to wait until April for advice, or manage their bees blindfolded.

Financially, according to the figures of the promoters, it is a failure, as it will cost 7*l.* per year more than the monthly *Bee Journal*, replete with sound practical advice, if a copy were sent each month to every one of the members, and the annual report costing 6*l.* produced as usual, notwithstanding the very low price a printer has offered to execute the work and fill the editorial chair into the bargain. One principal idea of the promoters is to 'use the scissors' upon other journals; if so, the readers will receive the advice or news secondhand, and after a lapse of time, perhaps, sufficient to negative its effects.

The usual meagre attendance of Committee-men was the principal cause of the motion being carried, only four voted, three for and one (myself) against. Two of these three were promoters, the third being one who has been placed upon the Committee since the matter was brought forward.

I should not have troubled you with this latter portion of my letter, but publicity has been given to the meeting in these columns with but few particulars of it; my opposition was very, very faintly expressed.—W. B. WEBSTER.

A VOICE FROM THE COTTAGE.

[1473.] I am very glad to see that steps are being taken with the new year to bring the cottage bee-keeper again to the front, and also that a new and cheaper journal is promised him, although I cannot see how we can have a cheaper paper than the *B. B. J.*, or a more ably conducted one. There is one little improvement, however, I think might be made. I should like to see the *bonâ fide* cottager show himself in print; to hear a little of his successes and of some of his trials and difficulties. I have been a subscriber for a year now, and during that time I do not remember to have seen anything of him. I am afraid he is too much over-awed by the learned gentlemen who from week to week almost overwhelm with their stores of knowledge of all the mysteries of bees and bee-keeping that he is fain to hide his diminished head, lest, like some unlucky bee that we have read of lately, he should be snapped up by some tomtit in the form of some expert or other.

Now, Mr. Editor, I should like to know whom we are to include in the term cottager. I presume it would include any working man of small means in an agricultural neighbourhood, whether working in his shop or on his bit of land, or as a day-labourer on a farm. In most villages there exists a class of small, working tradesmen—the village smith, the carpenter, shoemaker, tailor, &c., who in these times find it a hard job to make both ends meet, and would fain add to their little means if they only knew how. Several of our correspondents lately have been wondering what trade could be worked with bee-keeping. I venture to say that in most instances any village trade will work with it; for, as a rule, there is a garden, and sometimes a paddock (if the man keep a pony) where there are plenty of spare corners he might find to put a few hives in. It is in the interests of this class (to which I have the honour to belong) that I should like to say a few words. I am a smith myself, like Longfellow's 'Week in, week out, earning whate'er I can' (which is not much, I can tell you), and having a nice plot of ground at command, I thought I should like to keep bees. I thought over it a long time, but there seemed so much mystery about them that I was afraid to try. However, happening to be at a cottager's sale one day, and seeing some half-a-dozen skeps of bees for sale, I ventured to buy three skeps for a trifle, and that was my first start in the line, now four years ago. Naturally, like most other bee-keepers that I have met, I had a little touch of the fever, and, being of a studious turn of mind, I began to seek for information. Of course I turned to my nearest bee-keeping neighbour, who gravely asked me if I had told the bees they had got a new master. I gave him up as a bad job, and being near swarming time, I asked another, who kindly assisted me to hive my first swarm in a skep (I knew nothing of bar-hives then), properly dressed with beer and sugar, and wiped with elder-leaves in the orthodox way. But, like riches sometimes do, they took to themselves wings and flew away. That summer I went to the Royal Agricultural Show, and in my wanderings came across the bee-tent, and was very much interested in what I saw;—I can scarcely say in what I heard, for I could not make much out, except that you had only got to do this or that and you would soon get a fortune. One thing I did remember, however, and that was to get the *British Bee-keeper's Guide-book*, which I did, and then I really started to work in earnest. I found I had a great deal to learn, and it would be as well to proceed with caution; so, after a prolonged study, I ventured to buy a bar-frame hive, and by following instructions given, and a little advice here and there, I drove the bees from one of my old skeps and stocked my new hive. I soon began to find that I could not afford to buy even cheap hives, so began to burn the midnight oil in trying to master the theory and practice, and make my own hives and appliances, which I am glad to say I have succeeded tolerably well in doing. Of course I worked my own trade in as much as I could, and made some frames, rather novel ones, but they answer well. Up to now I have made a bee-house for skeps, ten bar-frame hives and frames, an extractor, section-crates—of an original character, a brick hive, fountain, &c., and almost all after seven in the evening. I would strongly advise cottagers as far as possible to make their own hives, because I believe by that means they will more quickly learn the science of bee-keeping, being necessarily compelled to study in order to ensure success.

A word or two on bee shows. I cannot see that they are of very great advantage to the cottager as at present managed. The information obtained at them, I am afraid, more often leads him astray than benefits him. He begins driving bees, and messing them about before he has mastered even the elements of the science; and frequently, after wasting a lot of time and money, he either gives up in disgust or is compelled to make a fresh start. I should like to see a greater readiness on the part of the lecturer or manipulator to answer the

questions of the novice, and to give simpler lectures specially bearing on the first steps to be taken in bee-keeping, and not to bewilder him with elaborate manipulations. I think a little conversation with, or a visit to the apiary of a fellow-cottager more advanced than himself would be of more service to him, and stimulate him to try and do likewise. What we want is unity among ourselves, the desire and will to help one another, and to cultivate that fellow-feeling that would make us wondrous kind. There is one thing, too, that tends to depress the bee-keeper of small means, and that is, the constant changes that are continually taking place in almost everything pertaining to the profitable management of bees. It is utterly impossible for him to go in for buying new queens, expensive feeders, the latest hives, &c., for the simple reason that he cannot afford it. That our new *Journal* may be taken up heartily by the cottagers, and prove a boon to them and a success to all concerned, is the hearty wish of—A Village Blacksmith.

A CHAPTER ON SKEP MANAGEMENT.

[1474.] Some time ago I promised to send you some information respecting the use of skeps in this neighbourhood. The cottager here does not keep bees for a hobby, but for profit. The following is the mode of management, and some of it I have not seen in any other part of the country. First of all, I wish to draw your attention to two facts, viz., this part is not a good one for bee-keeping, because, being so high, it is very exposed and cold, and there is only one honey harvest, that the heather. All stocks are worked with this particular end in view, and that reason will account for the peculiar management in a great degree. We begin in the spring; the season opens about April as a rule, although bees have been known to 'bear' here as early as February 11th, but that is very, very exceptional. The stocks are fed when required by means of a drawer lined with zinc fitted under the floor-board containing a float of perforated wood. They are only scantily fed to keep them going. The only swarms are natural ones, and they come off during the last week in June or beginning of July, but sometimes extend into August, showing the lateness of the district. All swarms are hived into straw skeps and fed, if required, for about three days.

About August 12th, the time when grouse-shooting commences, all stocks and swarms are packed up overnight or after 6 p.m., and loaded up and taken to the moors. There they remain until the honey-flow commences. If the season is very dry, no honey is secreted in the bloom, and if very wet the bees cannot work; for instance, this last season for three weeks, although there was a perfect sea of bloom, yet it contained no honey whatever. Rain came, and five days was the sum total of the honey-flow, as after that the continual rain prevented any more being gathered, but during the five days mentioned each fairly strong skep gathered upwards of 20 lbs. Well, to return, the hives are all set out and allowed to take their chance, no covering provided except a large sod. The hives are visited now and again, and if any seem to be short of room an 'ipper' or eke is added, and thus they remain until the end of the season, about September 14th. No supers are used.

Saturday following the latter date the hives are fetched home, and every one which contains over 10 lbs. of honey is taken. This is the part of the plan which I think peculiar to this district. All hives containing more than 10 lbs. are driven, and having previously considered how many are to be wintered, the bees are divided amongst them. Each hive is given a good whisk round and placed on its stand over one of the drawer-feeders, and fed up until the weight reaches 20 lbs. or over (30 lbs. of sugar will make 45 lbs. of thick syrup), and it takes only 20 lbs. of sugar to form sufficient combs to nearly reach the floor-board and stores for winter, and therefore I can refute the statement that it requires 20 lbs. of honey to make 1 lb. of wax. All the combs, minus the little brood there may be, are put in a large press, having three sieves of fine brass wire mesh, and subjected to great pressure. The remaining blocks of refuse are boiled in water, and the wax extracted. I may here say the honey thus extracted is perfectly clear, and contains only a very small percentage of pollen.

For this plan the advantages are, very little trouble in management, *all* the honey is taken, new and clean combs are formed, no foul brood, and 20 lbs. of sugar only costs *3s. 4d.*, sufficient to winter one stock, whilst every 10 lbs. of honey is worth 10s. here. You now see the reason of this plan. The wax also obtained realises *2s. 6d.* a pound. The only disadvantage is in the spring, on account of the extra amount of work. Many old bees are worn out, and there being no pollen stored, stocks are weak (but they winter better in skeps than in wood), and for this plan they are not required strong until August. This system has been carried out in this district for the last twenty years. A good stock in a favourable season will yield from 30 lbs. to 40 lbs. of honey, and on account of the honey-flow being so sudden and quick, the queen is soon crowded out, but when two or three lots of driven bees are added together and fed in September, a batch of new brood is hatched off before winter sets in.

I am sorry I cannot give exact account of income and expenditure, as I have mislaid some memoranda I made during last autumn.—W. Robinson, *Yorkshire.*

IRISH HONEY AT THE GLASGOW EXHIBITION.

[1475.] I think that Irish bee-keepers owe a debt of gratitude to Mr. John D. McNally and his brother for the exertions they are making to open up new outlets for the sale and use of honey by their scheme to exhibit samples from all parts of the world at the forthcoming Glasgow Exhibition (1417); and I am sure no pains and trouble will be spared by them to make their part of the Exhibition as attractive and interesting as possible. I received a large order for honey from Mr. John D. McNally in December, and I have been much gratified by hearing from him that he intends some of it to have a place amongst his Irish samples. He is still anxious to obtain anything in the way of a novelty, and any Irish bee-keeper who has anything of the sort likely to increase the interest in and attract notice to the Irish part of the honey show, will greatly further the good cause, and aid the efforts of the Messrs. McNally, by sending such to them. There is no doubt that something is needed to extend the demand for honey if it is to be of benefit to bee-keepers; it is most disheartening to work hard all through the honey season, and after a grand honey harvest to find it next to impossible to dispose of the produce. I have quantities of first-class sections still on my hands, and the demand seems absolutely *nil*, so far as Ireland is concerned.—E. E. Rutherfoord, *Carlingford, Co. Louth.*

AMATEUR EXPERT AND THE THIRD-CLASS EXAMINERS.

[1476.] Let me thank 'Amateur Expert' for acknowledging the authorship of the remarks made with regard to our Third Class Examiners in the *Canadian Bee Journal*. I know him well, and feel that I can appeal to him with confidence to set things straight if he has done us any wrong in this matter. My objection is not made to a *nom-de-plume*, but to it being the cover of a grave charge. As to the charge I would bring forward the following figures. During the years 1884, 5, 6, and 7,

127 candidates presented themselves for examination. There were in all 18 examiners, and of these Messrs. Walker, Sclater, Hooker, C. N. Abbott, Bellairs, Raynor, Seager, Blow, W. B. Carr, and Martin, examined 99 out of 127. The remaining eight examiners are all men whom I believe to be competent and quite capable of finding the queen in reasonable time, but without discussing their merits, we have here the fact that nearly four-fifths of the whole number were examined by men of whom no one would venture to hint that they were incompetent.

Has not the Examining Board reason to complain if, in a description, *not of one particular examination, but of third-class examinations in general*, it is alleged that to capture the queen is 'a feat that the examiner *probably* could not accomplish in ten hours?'

With regard to my 'slowness' I may say that I do not take in the *Canadian Bee Journal*, but the paragraph in question was shown to me on Wednesday, January 18th, and my letter appeared in the *British Bee Journal*, published the following Wednesday, January 25th.—HENRY BLIGH.

PREVENTION OF INCREASE.

NUMBER TWO.

[1477.] In preventing increase it is not necessary to prevent swarming; in fact, in working for comb honey I prefer to have the bees swarm, as I think they work better after the swarming impulse is satisfied. When the time comes for putting on the sections look the hive over carefully, cut out all the queen-cells, put on the supers and let them alone. If they go to work they will soon need more room. As soon as the first sections are finished take them off and replace with empty ones. With young queens this method will often prevent swarming, but when you put on the supers, if they have made preparation for swarming, let them swarm. Do not cut out cells and fuss with them, for they will not work while they are thinking about swarming. Have your new hive ready, and as far as convenient from the old stand. As soon as the swarm issues open the parent and remove all the combs but one to the new stand, bees and all, but be sure that you have *removed every queen-cell*. Put in one frame of foundation to fill the hive; take the super from the old hive and put it on the new one. By this time the swarm will be settled in your hiving-box. Now carry them to the new hive and run them in, as you now have all the bees and brood of the old swarm, except the one comb left at the old stand and the bees that are out in the fields; the latter will work with all the energy of a new swarm. Be sure and put on the super before hiving the swarm, and the bees will go into it with a rush and stay there. I never use any honey-board and am not troubled with the queen in the sections. I use the Langstroth frame. If I used small frames, and ten or twelve in a hive, I would leave two frames in the old hive instead of one. If they should swarm again in the course of two or three weeks treat them as before; if they persist in swarming supersede the queen. As to the frame of brood left in the old hive, leave it alone till you have bees enough to fill a hive; then unite the colony at sundown, remove the empty hives, put on the super, and the bees will go to work promptly. With this plan you will have only one new swarm out from eight or ten old ones, and still have them in the best condition for storing surplus. I think they will work with greater energy than when they are put back on the old stand.—JOHN H. RUPERT, *Woodrock, Pa.* (*American Apiculturist.*)

PARALLEL *V.* RIGHT-ANGLED FRAMES.

[1478.] 'W. R.' states on p. 52 in your issue of the 26th January (1450), 'Under the other system (*i.e.*, parallel) every passenger has to burrow under or scramble round each of the ten or eleven combs the hive contain before reaching the back.' This would lead one to imagine they were cramped for head room, or had a difficulty in passing under the frames; but it is not so, as all the hives I have seen on this system have ample space below for the bees to travel in any direction they like. And as regards ventilation, in my opinion it is better than the right-angle system. But I don't think there is really enough difference between the two systems to make any one change from one to the other. There is a good deal in what one starts with or takes a fancy to.—GEO. WHALLEY, *Mon.*

BEES—IRISH AND MOORISH.

[1479.] I have just returned home to my bees after four months' absence in Morocco, and found all the hives looking well and the bees very lively, the weather being extremely mild for the time of year. On January 23 there were half-a-dozen good-sized clumps of yellow crocus in bloom, and the bees rolling about in them in great delight. These crocuses are not the ordinary kind, and blossom a little earlier; they have smaller blooms, and the petals curve back, giving the flower a star-like look. The ordinary crocuses were also beginning to bloom, and besides there were *Pyrus japonica*, wallflowers, snowdrops in quantities, a few stocks, and anemones also in flower. I hope only we shall not have to pay for it all by-and-by with snow in March, &c. There is a great deal of furze in blossom, and to-day out walking I saw half-a-dozen bushes quite yellow with blossom. All this means that the bees are out a great deal, and I have got my usual 'starvation' panic on; so to ease my fears I removed the hive-covers the other day when it was quite hot at noon, and gave some more candy to the hives that had consumed their autumn allowance of it. Only one hive seemed at all damp, and to that I will give a dry quilt on the first good opportunity.

I had not much time to inquire about the bees in Tangier and its neighbourhood, but I should think at certain times of the year the yield ought to be large. I left about the middle of December, when the orange-trees were coming into blossom, and from what I heard I should expect a good yield of honey from that time till well on into summer, when the drought would probably check the honey-flow. I saw some bees in frame-hives, but I think they had 'established a funk,' and their owners showed a marked indisposition to interfere with them. I heard of one proprietor whose attempt to take some of his honey ended in his precipitating himself into his garden pond. And this in spite of veil, gloves, and smoker. It was plain to me that the bees were very aggressive, and as I had no protecting armour, I left them religiously alone after my first experience. I approached the alighting-board of one frame-hive cautiously, keeping well to the side, but when I was about four or five feet off a couple made for my face and neck,—and I fled!

I was unable to get a sample of the honey, but intended to bring you a few of the bees, which I proposed to entrap cunningly, but as my journey homewards was to be a long roundabout business I gave up the idea. I shall hope, however, to visit Tangier again next autumn, and will, if I have the opportunity, make good the omission. Anyhow, the bees are regular 'demons,' and I hope no one will improve (?) our home race by crossing them with Moorish. They are very dark-coloured bees, and I could see no bars on them. The Moorish bee-hive is a hollow tube of cork-bark. It is well to know this, lest one should sit upon or kick the (apparent) log of wood, which is just put on the ground at any convenient place.

On the high ground between Tangier and Cape Spartel I saw bees working busily on the beautiful tall

heath which was in bloom in November and December; but I also saw them working in indescribable numbers and with feverish energy on the vile, sticky compounds that the Moors devour as sweetmeats, and that are sold in quantities in the market-places and streets of the Moorish towns. As these sweets (?) are made with the most rancid butter that can be procured (no other suiting the Moorish palate) I confess I think some of the honey must be of curious flavour. The trays of sweetmeats were literally covered with bees, and the vendors did not attempt to drive them off. Probably it was safer to leave them alone, the Moorish costume leaving so much of the person exposed to insect attack.

One queer thing I noticed as to their pollen-gathering, the like of which I never saw at home. After breakfast, the day after my arrival at Tangier, I saw a lot of bees hovering round the Venetian shutters outside the windows. These were painted a most vivid green, and the bees, I soon saw, were working away at the paint and storing it on their legs as pollen. It was certainly extraordinary to see the big pellets of brightest emerald green. They seemed to get it most easily on the edges of the shutters and wherever the paint was at all lumpy, and at all these places the marks of 'nibbling' were very apparent. Of course I was not believed when I made my report, and I was met with the popular fallacy that 'bees hate paint;' but 'seeing is believing,' and there was soon an end of scepticism on the subject. The emerald-green was very patent on the bees' legs, and every day they were to be seen at work. But what, in the name of wonder, they were going to do with that arsenical-looking powder in the pollen-cells, I am sure I do not know.

I have been dutifully reading up the four months' back numbers of the *Journal* that accumulated in my absence. That box wasp-trap is, I am sure, a good thing. Cushions with centre openings I have used for three years, and find them most convenient. From the condition of the small amount of comb-honey I left in stock in the house last autumn, I am convinced that *light* should be carefully excluded if sections are to be kept without 'weeping.' Some half-a-dozen I left in a very close-fitting box with one side glass have oozed very much, and are quite unsaleable, but a couple of dozen that were in a less air-tight wooden box are in perfect condition. The same idea struck me last winter when I wrote to you about finding a hive, in which the bees had died out from queenlessness, with all the bars full of honey, and none of it granulated, though the weather was extremely cold and frosty, and some of the honey was from heather. The bars were all sealed of course, but the hive was very cold.

So far, bees have wintered well here, but the open weather will necessitate care in spring. Excuse this long yarn, but I have been so long absent I felt I must have 'my say' to you.—F. W. C., *The Mall House, Lismore, Ireland.*

COUNTY BEE-KEEPERS' ASSOCIATIONS.

[1480.] There are two important considerations affecting the work of Associations which the length of my last communication prevented me from speaking of. The first is the fact, patent to all engaged in active management, that the wants of members are in a progressive and transient state, and therefore the programme for one year will require modification for the next season, and in two or three years time may be quite out of date and unsatisfactory. The second is, that the amount of work which can be undertaken is sharply defined by the income by subscriptions, and that a serious proportion of income is unavoidably swallowed up by inevitable expenses (printing, postage, affiliation fee, &c.) which outsiders never reckon upon when estimating how many benefits can be given to a member in return for his subscription.

The difficulties of management are increased by undue expectations raised by such reasoning as that of the compiler of 'Useful Hints' in your issue of February 2, who remarks 'that eighteenpence per annum should supply the monthly *Journal*, inclusive of the halfpenny wrapper, to every cottage subscriber of 2*s.* 6*d.* to his county Association, leaving 1*s.* to the county funds.' This assumes that there is no other Association work to be considered, and, less clearly, that subscribers of 2*s.* 6*d.* are to be granted a boon denied to 5*s.* members.

The fact is, that the average amount received from, and therefore the average amount which can be expended on, each member, including the 2*s.* 6*d.* cottages, is about 5*s.* 9*d.*, and that the following expenses per member are inevitable in an Association which already undertakes the usual honey show and expert's visit:—Printing, 1*s.* 6*d.* per member; stamps, affiliation fee, and sundries, 1*s.*; prizes at show, 1*s.* 3*d.*; spring tour, 1*s.* 6*d.*—total, 5*s.* 3*d.* It will be seen that it is difficult to add the free gift of even a monthly *Journal* to work already undertaken, but that the circulation of such a journal may be practicable, say, one copy to four members. My figures are based on our own balance-sheet; they may of course be different under different circumstances, such as a large increase of members.

Organization of Associations.—I will pass over the ornamental officers, as president and vice-presidents, without whose guineas it would be difficult to work. It may have been noticed that I have assumed that the average member joins the Association from selfish motives for the advantage he may gain thereby, and accordingly I have discussed the work of the Association from this standpoint.

In speaking, however, of those who assist in the management, I can safely assume that the average worker is willing to help from love of the cause and willingness to assist others; being but human, however, he on the one hand loses interest if he is not assigned some share of actual work and responsibility—attending committees to approve of others' work is not sufficient—and on the other hand, if the main burden and responsibility of the Association gradually falls upon him, and he has practically to manage a business for the benefit of others, a time comes when he feels he can do so no longer, and retires.

The Central System.—By this name I refer to the older organization of most Associations, by which no work was done except by the Central Committee; and as all work depends on personal energy, and no committee-man, however energetic, had power of action except when the committee were called together by the secretary, it naturally came to pass that everything depended on the secretary, and the Association became a business managed practically by him alone. It is on account of this weak point that a change becomes necessary, and that in the direction of power of independent action by workers in different parts of the county.

District System.—Under this plan the county is divided into districts, which should be defined by existing divisions—in our county the petty sessional divisions were found the most suitable. Each district is given into charge of a local secretary, who shall take charge of the work of the Association in his district and receive subscriptions. He should call a meeting of members in his district once a-year, and in our case we have entrusted the election of the local secretary for the ensuing year to this meeting. This meeting might be combined with a short lecture or discussion on practical points of bee-keeping. It is doubtful whether local secretaries or other unpaid officials should undertake much expert work, for it too frequently happens that members who receive such help begin to ask for it as something due to them in return for their subscription. For this reason I have doubts about the advisability of appointing local advisers in districts, but I cannot speak from experience,

Hon. Secretary.—This post will be more easy to fill under the divided responsibility of the District System, but the success of the Association will still depend upon the energy of the hon. secretary, who will in some districts have to fill the place of non-existent or useless local secretaries.

Treasurer.—On the one hand, it is well to have an independent treasurer, as it presses one more into active interest in the work; but, on the other hand, it creates extra work and expense in postage and remittance, if the treasurer should live at a distance from the hon. secretary; and I am inclined to think that if the hon. secretary would also act as treasurer, it is not much increase to his work, and enables him to keep an accurate list of members, to apply for subscriptions at the time of sending out other notices, and thus to get in money much more quickly.

Committee.—The local secretaries, with other officers, will constitute this body; but as they live widely apart, I think it is well to add the names of a few suitable members living in or near the town where committee meetings are usually held.

The rules of an Association should be as simple as possible, and not designed to cover every possible contingency. It is amusing to notice the space wasted in many annual reports on the 'Objects of the Association,' usually theoretical and not practical.—ALFRED WATKINS, *Herefordshire B. K. A.*

COUNTY BEE-KEEPING ASSOCIATIONS.

[1481.] Letter 1451 in your issue of the 26th January, 1888, asks some questions of me, or I would not further trouble you on the above subject.

In what way does Mr. Garratt want the Committee of the B.B.K.A. to move? Surely he might have given his views to his county representative that they might have been discussed at the meeting of county representatives. If the counties work together they will be an assistance to the British, and at the same time the counties, as a body, can point out many ways in which the British can assist them, but if each county goes with a separate proposal the Committee of the B.B.K.A. cannot give the time to consider them.

Why should not duly qualified county representatives, or County Honorary Secretaries, be *ex-officio* members of the B.B.K.A. Committee? I have written on, and named, the subject for twelve months and never heard any one speak but in approval of the suggestion. Why, then, at the coming annual meeting cannot a rule to meet the subject be proposed? I cannot attend the meeting, or I would have given notice of my proposition.

Will Mr. Garratt pay me a visit? I will then prove to him that no paid Secretary with ample funds at his back could cover Lancashire and Cheshire for bee-work. In the six years the Association has been in existence, in place of *paid*, our Association has had *unpaid* Secretaries, who have also had to consider the funds at their disposal.

My Committee have been advised by post-cards of the date, &c., of the next meetings a week before they were to be held, and the post-cards have stated the nature of the business requiring their attendance, and at all these meetings the accounts have been produced for signature by the Chairman, and the position of the Association to date been made known to the Committee. This is the simple way in which the Committee, to whom I am greatly indebted, have assisted me with their attendances.

After six more years with unpaid Secretaries, I am sure there will be new districts for an energetic Secretary to look up in Lancashire and Cheshire. Fortunately there is nothing uncertain or indefinite in our aims, and stimulus we must find in new districts.

Mr. Garratt's long experience differs from my very short one about the selection of *officers* in an Association; and if all would resign when they do not fill the requirements of the position they would confer a great benefit on bee-keepers in general, who prefer to let things drag on rather than hurt the feelings of some one who will neither act himself nor let any one else; but on this question of officers of an Association I could write more, but I have already trespassed too much on your space.—WM. LEES MCCLURE, *The Lathams, Prescot, January 27th.*

SECTIONS WITHOUT SEPARATORS.

[1482.] It might not be inappropriate, now that the time of preparation for the coming bee-season is approaching, to review the question of the disuse of separators as noticed in the *B. B. J.* and elsewhere during the past year. We find many have tried working without them, and results varied. The $1\frac{1}{2}$ in. wide thus worked has been a failure (see letters in *B. B. J.*, Nos. 1371, 1372, and 1380). The $1\frac{3}{4}$ in. not so. We may, in fact, consider them to have been a great success. Our first notice of this section is at the Hunts Agricultural Show (*B. B. J.*, August 11th, page 346). Mr. J. H. Howard, junr., here took a first prize and B.B.K.A. silver medal with his dividerless $1\frac{3}{4}$ in., and Mr. J. H. Howard, of Holme Apiary, with the same takes first place at the Cambridge and Isle of Ely Agricultural (same page *B. B. J.*) and, I understand, the first prize in the Cottagers' class was also awarded to the $1\frac{3}{4}$ in. sections. Concerning these, Mr. Howard writes, 'Nothing can beat dividerless $1\frac{3}{4}$ in. sections.'

Let us now turn to *B. B. J.*, page 465, letter 1321, and we find that in Co. Leitrim, Ireland, the largest recorded take of comb honey but one was taken by the open-sided $1\frac{3}{4}$ in. dividerless, viz., 160 sections. This one larger, 194, by 'An Old Bee-master,' letter 1354, was taken from a hive worked on the 'Simmins' principle,' and as Mr. Simmins works this section without separators these may have also been the same. We next hear from the Isle of Man. Mr. Fryer writes (letter 1365), 'That his open-sided $1\frac{3}{4}$ in. worked without separators placed alongside his 2 in. looked better and weighed more, but that they were more easily injured in handling.' This applies to all open-sided sections, and will disappear when we become more accustomed to them; the close-sided $1\frac{3}{4}$ in. are safer in this respect; but in both we have a wide margin for unlucky knocks, extracting, and home consumption in the greater quantity of honey taken by them than by the 2 in.

We now come to America. We have it on the best authority that this section is increasing in favour in Canada, our friends there considering they take most comb honey by its use: but these sections were not quite level last year, nor were they at the Colonial the year previous. This can be explained by an indifferent and a bad honey year. It requires a strong honey-flow, such as we had for a short while this year here, to give quite level sections without separators. The same good authority says that in the States separators are in general use. Perhaps, the cheapness of extracted compared with comb honey, especially in the State of New York, has something to say to this: it won't pay to have to extract any section, and Brother Jonathan is willing to sacrifice quantity to get evenness of finish at all times. But we find Mr. Hutchinson at the Chicago Convention stating that he secures quite sufficiently even sections without separators (see *B. B. J.* about January 15th), and Mr. Heddon writes in the January *Gleanings*, 'That the best section for all purposes, whether with or without separators, is the $1\frac{3}{4}$-in. wide;' and in answer to a query from the Editor of *Gleanings* in the January number as to 'Which is the best width of section to use when separators are dispensed with?' only two of the leading bee-keepers, in reply, actually oppose working

without them; a third says unless you know you will succeed, it is better to use separators, while the remaining twelve, with one exception, give the 1¾ in., or seven to the foot, as being the best width to use. This one exception, Mr. C. C. Miller, says, 'Perhaps 1½ in.'

Our review, so far, places the dividerless 1¾-in. section in the first rank as to both appearance and quantity, and shows it is increasing in the attention and favour of bee-keepers.

The writer has nothing new to say of it from his own experience. His hives these last two years have been in a very exposed place, and he has enough to do to keep his bees alive and eke out a little extracted, without troubling for sections. Such a situation is the worst possible for bees, but even there they can be made pay their way, time and trouble not considered. However, he has sold some hundreds of sections for cottagers and farmers worked without separators; of these the 1¾ inch wide were the best, the 2-inch good, when the hives had been kept level, rather overweight, but when not level, proportionately crooked. But a venerable clerical friend writes, 'I don't think bees like separators. This year (1887) I had 700 two and three-pound sections (till lately our rev. friend made his own sections) worked without separators, and among the lot there were not twenty but were as level as a moulded brick.' Besides this our friend had 5 cwt. extracted, and how much more I know not.

How is that our clergy make such good bee-keepers? Must it not be from a closer acquaintance with the Book to which so many references have lately appeared in the *B. B. J.*, and if the brother bee-keeper among us who has not been as successful as he wished, but desires to become more so, will only look up those references he will derive very valuable information from them. Statements there made, 3000 years back, concerning honey and food connected with it, and the reasons for such, proved true by science only, now science and modern discoveries but confirm Scripture. Learning on bee matters is good, but it is the self-reliance and the habit of looking up to a Higher Power for aid that makes the successful bee-man.

We find necessary a strong honey flow for best results with sections without separators; but, perhaps, Mr. Simmins' method of crowding the bees into sections, as practised by 'An Aged Bee-master' with such good results, and as evidenced in his new anti-swarming hive, might give the same good results other years that there might not be such a vigorous honey flow while it lasted as this.

Our 'Aged Bee-master' has been ahead of the best of us in large returns of produce for those last seven years, has completely eclipsed our American brethren in general average, and his testimony should be valuable.—W. B., *Patrickswell, Limerick.*

FLOOR-BOARDS.

[1483.] The sketch figured on page 66 is a reproduction of the drawing of my floor-board, published in the *English Mechanic*, October 14th last year. If 'W. Corkhill' is not satisfied with my arguments in that journal, I shall be pleased to show him (and for that matter any bee-keeper interested) the boards as they have been in use since first invented. (The Editor has my address.) The sketch I published shows the alighting-board extending to front edge, and this is as it should be. The board in 'W. C.'s' sketch is too far back. I have stocks over these boards that have gone through the late frosts without loss of a bee, in hives 24 inches long inside. They have no dummies, and the air-space in front of the frames is about 12 inches deep. The clusters are at the back of the hive. I am also wintering stocks over the flight-holes without any loss in bees; these clusters are closed in with light dummies at the back.

I consider dummies an abomination, and hope to do without them altogether, as I understand Mr. Simmins is doing.

I make my hives three inches thick all round, packing the spaces with shavings. This leaves spaces beyond the frame-ends, which are fitted with strips same height as the frame-tops; the quilt then extending about an inch beyond the frames makes an air-tight top. —Silke.

[We have compared Mr. Corkhill's sketch, and description thereof, with those in the *English Mechanic*, p. 160, and find the sketch almost identical, and the description nearly *verbatim*. The similarity is remarkably striking. — Ed.]

NOTICES TO CORRESPONDENTS & INQUIRERS

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

J. B., *Carrick-on-Suir.*—1. *Building brace combs.*—Bees frequently build brace combs when the space exceeds ¼ of an inch. We should place a slatted honey board between the two hives to reduce the space. This can be made of bars ⅞ inch wide and ¼ inch thick, framed so that they will correspond with the tops of the frames. The hive above is placed with the frames across. 2.—*Queen ascending to third storey.*—If you have any objection to the queen going up into the third storey, place a piece of American cloth on the tops of the frames 1 inch smaller all round than the inside of the hive, so that the queen would not be able to pass up the centre, but the workers could enter the upper storey round the sides. We have found this to answer in most cases. 3.—*New edition of Guide-Book.*—We thank you for your kind remarks. The new edition which has been in a great measure re-written to bring it up to the times, is in the printer's hands, and we hope it will be ready very shortly.

Robin W. Woodley, Sussex Cottage Bee-keeper.—It has been our earnest desire to bring the *Bee Journal* within the reach of cottagers by reducing the price to one penny, but after carefully considering the matter we have found it impossible to do so if we keep it the same size as at present and keep up its present standard. We hope the monthly *Journal* will meet the requirements for the present, and we shall always be ready to give replies by post to any of its regular subscribers, between the dates of publication on any matters requiring immediate advice, upon receipt of stamped-directed envelope.

G. Whalley.—Our thanks are due to you for your kind note of approbation of our conduct in the matter referred to.

John Bainbridge.—*Third-class Examinations.*—Place yourself in communication with the Secretary of your County Association; who will give all necessary information as to time and place where examinations are to be held. There is nothing formidable in the requirements of a third-class examination. You are not required to write or speak on bee-keeping, only to prove to the examiner that you have a fair knowledge of the management of bees.

M. H.—*Doubling.*—A frame of hatching brood in the centre of the upper hive, with frames of foundation around it, will induce the bees to commence work above, and if the colony is strong and the honey flow abundant a second storey will soon be required. Your failure probably arose from failure in the two points mentioned.

E. Seymour.—*Bees in Peach-house.*—Bees never succeed when kept in conservatories. In the case you propound you would find great loss of bee-life from the inability of the bees to escape from the house. If you decide to move the bees, do it at once, but place your hive outside the house. The observatory hive might answer your purpose if well covered with woollen quilting.

Novice.—We shall be pleased to hear further from you on the subject of your letter.

W. J.—1. *Hive to Prevent Swarming.*—We do not like the sketch you enclose. You would certainly require an eke, even if you work for sections only. 2. *Large Sections for Extracting.*—We should certainly hesitate considerably before attempting to extract such large sections. Are you aware that the size you propose would, if the bees accede to your wishes as to filling them, contain about 4½ lbs. of honey? If you really wish for such large sections of heather honey, why not get the combs ready built out before going to the moors? We do not admire your taste as regards the fretwork flower over entrance.

W. L. Bird.—*Carniolan Drones.*—The bees sent are Carniolan. It is impossible to say from your query what is the exact state of your stock. Most likely it is queenless. Some fine day, when the *shade* temperature is 50°, or over, examine the hive quickly but gently, and notice if there is any brood, and, if so, whether the cappings project considerably beyond the surrounding comb; if so, it is drone brood, and your queen is worthless, or you may have a fertile worker. Let us know the result of your examination, and we may possibly help you if you give full particulars.

C. Wade.—We have requested an expert to pay you a visit.

W. M.—A reply will be given in our next issue.

Novice.—*New Mode of Hanging Frames.*—Your description being unaccompanied by a sketch does not enable us to judge of the merits of your method. If you send sketch, we will be happy to give an opinion.

T. Hewgill.—*Moor Honey Granulating.*—Heather honey is naturally much denser than, say, clover or lime honey. Last season's honey had a tendency to candy much more quickly than in ordinary seasons, owing to the prolonged drought. Did you keep your honey in a room at about 65° to 70°?

Cheshire.—*Economy in Foundation without Swarming.*—Under the circumstances, we would recommend you to try Simmins' non-swarming plan by putting a body-box containing frames with half-an-inch of foundation only in as starters, *under* the brood-nest. You would still tier up as you suggest, giving full sheets above. Ask any further information you may require.

'T. H.'s' reply to 'A. C.' p. 68.—'I do not fasten the pieces of wood for keeping the frames the proper distance apart at the bottom, but quite loose.'

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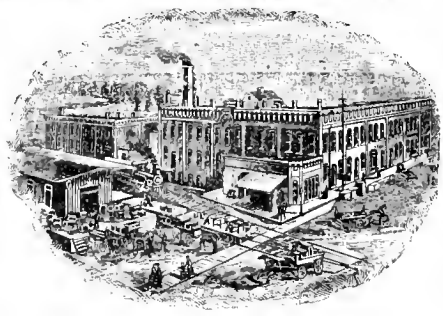

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THE
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Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

COTTAGER'S MONTHLY JOURNAL.

We should feel obliged to County, Provincial, and Local Secretaries, if they would kindly furnish our publisher, Mr. J. Huckle, Kings Langley, Herts, with the names and addresses of all cottagers and artisans who take an interest in bee-keeping, so that he may have the opportunity of forwarding each a copy of the new Journal.

COMB-FOUNDATION MANUFACTURE ON A LARGE SCALE.

During our travels in America, when we went to see Messrs. Dadant & Son, we were very much interested in their manufacture of comb-foundation, and we asked them to give us fuller particulars than those we could take away in our notes during our brief visit there. What we saw there, and the hospitable manner in which we were received, must be reserved for future record, but as they have been kind enough to accede to our request we are quite sure that our readers will be interested in a description of the largest comb-foundation manufactory in the world. We noticed the particular care and precautions taken in the manufacture, and the resulting uniformly good quality of the foundation. This care in the manufacture has met with its reward, seeing that they are at the present time the largest makers of foundation in America, and we believe Mr. Root, of Medina, comes next. We hope the description will prove not only interesting, but also instructive.—ED.

The building into which the wax in bulk is brought, and where it is also melted, is furnished, on its highest or northern side, with a strong platform, against which the carriers push their carts, thereby facilitating the unloading. As the height of the platform corresponds with that of the cart, the casks, cases, or sacks containing the wax in bulk can easily be shifted on to the platform. This platform extends to the interior of the structure, with which it is connected by means of sliding double doors running on rails. Inside, the platform acts also as the base of a large weighing machine, the flat plate of which is even with the floor. As soon as a package is weighed its contents are sorted, the best coloured wax being put aside to be afterwards used for the manufacture of comb-foundation for sections.

The store-rooms consist of two compartments of unequal size, and are capable of holding from 10,000 to 12,000 lbs. of wax. Between these store-rooms and the melting departments, there is a roomy corridor, allowing for the storing of many thousand pounds of purified wax in 40-lb. cakes.

The copper or boiler used for melting and purifying the wax is in the shape of an oblong, made out of thin sheet copper, and capable of holding 800 lbs. of wax.

This copper is moveable, and is simply made to rest upon the brick stove or furnace. Not being a fixture it is easily cleaned. In front this boiler is furnished with two taps, one of which is placed level with the bottom, and the other about four inches above it.

Before the fire is lighted the attendant puts some water in the boiler, say, four inches deep; then the wax is added.

As soon as the required heat is reached, the wax is carefully skimmed, and then drawn from the upper tap into tin moulds, into which about a couple of inches of hot water had already been put, drawn from the lower tap of the copper. These moulds are round, rather wider at the top than at their base, are furnished with two handles, and will hold about 40 lbs. of wax.

As soon as one of these moulds is filled it is taken to a kind of double-walled cupboard. There are several of these cupboards all round the melting department, each of which can hold as many as nine of such moulds placed one upon the top of the other, and arranged in three tiers of three each. As soon as one of these cupboards is full it is locked up, so that the wax may remain in a liquefied state at least twenty-four hours, and deposit in the water any impurity it may contain.

The melting operation is gone through three times a-day, making up from 2200 to 2400 lbs. of wax. When the wax is cold the moulds are carried to the back of the building, where they are turned over upon a tub, the bottom of which has been replaced by two small bars. In this position the water will run out: the mould is then lifted up, leaving the cake resting upon the bars. The attendant now scrapes off the cakes any impurities that may be found adhering and puts these into a tub where they are allowed to accumulate. Thus cleared, the cakes are piled up in the corridors or passages, pending their final removal either to the room where comb-foundation is made or to the purified wax-store. The latter is isolated from the other buildings and has been constructed of iron as an additional precaution against fire in the other buildings. As many as 1500 of these cakes can be stored in this building, representing an aggregate of about 60,000 lbs. of wax. The present stock stored in it is estimated at 30,000 lbs. The impurities, including such particles as may be found in the washings, are drained and put out to dry in sixteen large flat boxes, four inches deep and well exposed to the rays of the sun.

In summer, as soon as they are well dried, they are distributed among eight solar wax-extractors, three feet long by two wide. The wax dripping from them is taken to the coarse wax-store. What still remains about ⅞ths of the original bulk is once more melted down by steam

in water, containing a small quantity of sulphuric acid. It is then melted in a very large quantity of water in order to remove every trace of acid and to prevent the moulds from becoming oxidised.

Between the building which serves as store-room and the one in which the comb-foundation is made there is a large pump, by means of which water is pumped into two large cisterns. Rain-water is better suited for all these operations than spring and well water, and large quantities of it are required. The room in which the wax is worked into sheets of foundation is supplied with a small steam boiler placed in one corner. From this boiler a pipe conveys the steam into a cask, where it heats the wax, to be afterwards worked into sheets of comb-foundation. In the centre of the room is a copper vessel, vase-shaped, twenty inches long by eight wide and fifteen high. The liquefied wax is put into this. At one end a small tub, two feet six inches wide, is placed, full of water, this is always kept cool; at the other end there is another of these square tubs, the latter contains tepid water, into which the plates with which the wax-sheets are made are dipped. Besides these there are two other narrow vessels, covered with tin, and a sponge is placed on the top of each.

Two men are seated opposite each other, with the vessels containing the liquefied wax between them; they wear waterproof aprons to protect them from the water and the wax, which drips off the plates during the operation of dipping. One of them takes hold of one of the boards, passes the sponge over it, and dips it three or four times into the liquefied wax up to where he holds it; he then dips it into the cold-water tub, takes it by this cooled end and dips the other end three or four times more in the wax, finally he places it into the cold-water tub, whence it is taken up by the other man, who, after sponging it all over, repeats the dipping process and allows it to get cold.

A third man, he who heats the wax and serves it out to the other two, then takes the sheets more or less cooled out of the tub, passes a knife along their edges, strips them off the plates, and distributes them on eight or ten different piles, where they are allowed to get quite cool, thus preventing them from sticking to each other, which they would be sure to do if put up in one pile only. Twice a-day, that is, at noon and in the evening, these piles are weighed and taken down to the cellar, where they are allowed to get thoroughly cold and attain the necessary tenacity. Three men can dip as much as 1300 lbs. of wax for thick foundation per day; four men, of whom two would be assistants, could do as much as 1500 lbs. for thin foundation. The cellar is fitted with wooden cupboards to protect the sheets from dust, and in it as much as 10,000 lbs. of them can be stored.

The room where the rolling is done is next to the dipping-room, and the same boiler warms the water which is used for softening the sheets before they are passed through the rollers. As many as fourteen sets of these rolling machines are to be seen in this room, although only four of them are worked simultaneously. The others are kept there in readiness in case any of those in use should require repairing, which is not a rare thing, considering the softness of the metal of which these rollers are made. There are four tables, their longest side being inclined slightly forward, on part of which stands a machine, fixed to a tin plate. These tables have an extension sloping inwards, covered with tin and soldered to the plates above mentioned, which catches the water falling from the sheets and keeps the workmen from getting wet. This water, as well as any dropping from the machine, runs into a vessel placed under the table.

Two men attend to each machine. One of them stands by the handle, brushes the rollers with soap-suds, whilst the other sitting in front of the machine, takes a wax-sheet from the tepid water-tub standing on his right-hand side, and places it in front of the rollers to be drawn in by them. The first man detaches the end with a comb, and pressing it against the upper cylinder, brings it within reach of the other, who takes hold of it with a pair of spring pliers with wooden jaws held in his left hand, whilst with his right hand he prepares another sheet. If the sheet comes out perfect it is piled up on the left-hand side of the table, but if it should show the slightest imperfection, it is thrown into a cask on the left-hand side of the workman, to be returned to the boiler and melted again. The sheets are afterwards cut to the proper sizes and then placed upon shelves. A ticket attached to each pile indicates their thickness.

Four times a-day, whilst this work is going on, a few of the sheets are cut and weighed to ascertain if they give the number of feet per pound which each of the five sorts is expected to. These five sorts consist of the following, viz., for brood-combs, thick, 5 feet; medium, 6 feet; and thin, 8 feet to the pound. For sections, thin, 10 feet; extra thin, 11 to 12 feet per pound. This checking of weights is necessary, because, when the sheets come from the machines their weight is not always uniform, but depends upon the heat of the rollers, which increases as the work proceeds.

Many bee-keepers are of opinion that soap should not be used for lubricating the rollers. Its use no doubt would be detrimental if the sheets were not of a sufficient thickness before they were passed through the rollers, for, in that case, the wax would not reach the bottom of the engraved lines on the rollers, and the sheets would be wet with soapy water. But with sheets thick enough to be doubled in length after passing through the rollers, every particle of soapy water is driven out, and the rolled sheets come out of even thickness through their length and perfectly dry.

The machines used are the Vanderwort. The rollers of those intended for thick foundation are from 12 to 13 in. long; those for section foundation are 6 in. long only.

To prevent the sheets from sticking to one another, tissue paper is placed between them. Those to be sent away are weighed and sent down to the packing-room by an inclined railway, where each lot is labelled with the customer's name, and on the back of the label the weight, quality, and size of foundation are given; thus all mistakes are prevented.

Comb-foundation-making requires a certain amount of experience and practice, which cannot possibly be attained without continuous practical work at the manufacture.

When the men resume their work after the winter is over it often takes them several days before they can get into the knack acquired the previous season.

Comb-foundation-making requires, moreover, keen observation and sound judgment, in order to profit by every incident, however small, that may improve results, both as regards saving of time, improving the quality, and avoiding everything that may be detrimental. Even the most experienced men sometimes find themselves confronted by difficulties, either in the wax-cleansing or the rolling process, which they are unable to solve satisfactorily, and these often lead to results which make it necessary for them to recommence the work afresh to try and do better. These facts bear out what Mr. James Heddon wrote lately in *Gleanings*. Comb-foundation-making is a specialty of itself, and it is no more possible for a man to make a perfect article by working only a few weeks a-year at it, than it would be to become a good workman at any other trade during the same length of time.

It is because we have made comb-foundation a specialty that we have succeeded in bringing up our sales for this year, notwithstanding the poor honey season, to nearly 58,000 lbs. (57,831 lbs.) These figures do not call for comments on our part.—Ch. Dadant & Son, *Hamilton, November* 12, 1887.

USEFUL HINTS.

Weather.—Since our last the weather on the whole has been fine, but not sufficiently warm to entice forth the bees to frequent flights, and this is all in their favour. We have never known a good season to follow an unusually warm and bright February. In such case, increase by breeding and rapid consumption of stores are carried on in advance of the season, and too often a cold March and April follow, when spring dwindling, with other and even greater evils, speedily ensues. It is a pleasant thought, however, that days are gradually lengthening, that Nature is beginning to awake from her winter sleep, and one that should arouse the bee-keeper to make all possible preparation for the coming time of action. Although our colonies remain quietly at rest, to all outward appearance, yet within they are awaking to a life of activity. Cells are cleared out, and literally polished, for the reception of eggs: the brood-nest is day by day laterally and longitudinally extended; all *débris* is extruded from the hive; honey and pollen are conveyed from the outside combs to the immediate vicinity of the brood-nest; the young bees, on emerging from the cells, are carefully tended, brushed down, fed, and, on sunny days, enticed forth for their first flights by the older bees. In strong colonies, under these circumstances, stores rapidly disappear, and it behoves the careful, provident bee-keeper to see that none perish from starvation. For a month to come we allow no disturbances in our apiary by manipulation for interviewing queens, &c., but simply, by raising quilts, first on one side and then on the other, ascertain whether all is right within. If the sealed food has disappeared from the upper part of the combs, cakes of Good's food, mixed with a little pea-meal, are laid upon the frames and the quilts replaced, generally with an additional felt or woollen one, and the hives are closed for the next three or four weeks. Since no fear of attacks from robbers need at present be entertained, our entrances are left at full width. When such are anticipated, slides of perforated zinc are used for contracting, or a strip of glass of the full width of the entrance is placed on the alighting-board, resting back upon the front of the hive, so as to allow of exit for the bees at each end, and this almost invariably prevents robbing. Stimulation by syrup feeding should be eschewed for the present. The middle of March we consider early enough for this in our climate. It is well also to keep the bees confined to a certain number of frames, and as spring advances and colonies increase in numbers, to gradually increase the breeding spaces by adding a frame of sealed food from behind the division-board on either side, having first removed or abraded the cell capping in the centre of the comb on both sides and cut a passage through it. We are no advocates for stimulating to early breeding, since the early flights consequent thereon result in great loss to such colonies. We emphatically say, therefore, 'Still let your bees rest.' Give additional warmth by extra covering, but do not think of manipulation or disturbance of any kind except in cases of dire necessity.

Encourage cleansing flights whenever the weather is bright enough and warm enough, for nothing is more conducive to health and cleanliness. A sheltered position, a south aspect, and sufficiency of food, are conducive to cleansing flights, and consequent healthiness. We might have added to such requirements—young and vigorous queens. In any case these are a necessity to the highest attainments in honey production, but the very early stimulation of even such queens will end disastrously, and their laying powers will become temporarily suspended at the time when they are most required. Should there be any signs of dampness in the covering quilts, dry ones should take their place, and those removed should be disinfected and thoroughly dried, when they, in turn, may take the place of other damp ones requiring to be changed. It is better not to disturb the floor-boards, unless they are foul with dead bees, excrement, &c., in which case let them be removed and replaced by clean dry ones, with as little shaking or disturbance as possible.

Bee-keepers who are fond of flowers—and what bee-keepers are not?—will do well to provide wallflowers, borage, and *Limnanthes Douglasii*,—the three best spring bee-flowers with which we are acquainted. The pretty little rock-plant, *Aubrietia purpurea*, is also a great favourite, and in sheltered situations will bloom from May until August. Those are fortunate whose apiaries are within reach of fields of that beautiful crimson-flowered clover, *Trifolium incarnatum*, in which bees greatly rejoice, and which is the first to bloom of all the *trifolia*.

This, together with winter beans, form the mainstay of many apiaries, until the white clover blooms, with its abundant supplies of the finest honey producible, arrives. The tiny little yellow bloom on the common trefoil is also a great favourite with our bees.

The cotoneasters (*Macrophila et microphila*) and the mezereon, with its early pink bloom, are fully appreciated by the bees, as are all the willow tribes.

Artificial Pollen may be given towards the end of the month by sprinkling pea or lentil meal upon the blooms of crocuses during fine days when the bees are in full work; also in skeps or boxes filled with shavings, and placed in a sheltered sunny spot. Some prefer dredging the meal into empty combs, which are placed beside the brood-nest and confined by division-boards.

Surface Mixture.—Sawdust, sand, and ashes, or a mixture of all three, placed around the hives, save much bee-life at this season by forming a dry and warm material on which heavily laden bees, on returning wearied from the fields, may rest before entering the hives.

Snow and Birds may still demand attention, although of the former we hope to see no more for a long time to come. Should it again appear, however, it must not be allowed to remain on the hives an hour, but should be carefully swept off at once. Our old friends the tomtits, as also sparrows, must be looked after, or our bees will suffer much from their depredations, especially where trees and evergreen bushes surround an apiary.

Water.—We believe that much brood perishes during the early spring months from want of water, particularly where upward ventilation through pervious quilts is allowed. In small colonies, during cold weather, when the bees have difficulty in keeping up the temperature of the hive to brood-raising point, the larvæ die from lack of moisture, and, putrefying, becomes a fertile source of foul brood, while the colony dwindles, and finally becomes extinct.

Circular earthen pans (milk-pans), which are often used as roofs for skeps, form good water-troughs. They should be supplied with a float of thin wood pierced with holes, upon which the bees may rest as they sip the water. They are best sunk in the ground, and the water should be changed occasionally, and a little salt mixed with it. Some prefer to fill these pans with stones, which prevent the bees from drowning. A warm sheltered nook should be selected, where the sun shines with full force upon the pans, and, when first established, a few pieces of comb honey, or a plate of syrup, placed near them will soon induce the bees to mark the locality.

Stands and Roofs should be overhauled and rendered secure and weather-proof before the March winds and snowstorms—to which we are still liable—play havoc in the apiary. All chinks should be stopped, and a coat or two of paint where required would improve appearances, and render the hives impervious to moisture.

Price of Monthly Journal.—Mr. Watkins, secretary of the Herefordshire B. K. A., in his letter (1480) takes exception to the paragraph in our last 'Hints,' in

which we expressed the hope that county secretaries might find it practicable to supply the Monthly *Journal* gratis to all cottage subscribers of *2s. 6d.* per annum, and charges us with raising undue expectation by the expression of such hope. But is such a hope *really* beyond the possibility of being realised? We hope, and think, not. Our county Associations, as well as their parent, are based upon a philanthropic foundation, and we think that the English counties, even in the midst of this unparalleled depression, will be able to find sufficient funds to supply so great a boon to the poor agricultural labourer, to whom, in these hard times, every penny is an object. To be able to call the *Journal* his own—to have it at hand for reference in his doubts and difficulties—and to be able to secure it by a rough binding at the end of the year, would, in our opinion, do more towards popularising bee-keeping amongst the very class we are so desirous of reaching, than almost any other measure which could be taken; and we cannot give up the hope of seeing it accomplished, sooner or later. Nothing could be further from our wish than to 'increase the difficulties of the management of county Associations,' knowing how great already these are. Nor did we 'assume that there was no other Association work to be considered,' nor 'that subscribers of *2s. 6d.* were to be granted a boon denied to *5s.* members.' But we did suppose that a subscriber of *5s.* per annum and upwards neither required nor would accept—even if offered to him—the monthly *Journal* gratis. Depend upon it the expert's visits and the monthly *Journal* will be found to be the most effective weapons in the hands of the county secretary for reaching the cottager and '*bettering his condition.*'

Messrs. Abbott's Section.—We are indebted to this old-established firm for a nice specimen of their patent section, as illustrated and described in our last issue, together with the wood separators and a triangular piece of foundation. The invention is simplicity itself, and so tight is the grip of the foundation, when inserted, that there is no possibility of its escape. The celerity with which the operation of insertion is performed leaves nothing to be desired on that score, and the extra cost of *6d.* per 100 for sections, fitted with patent split bar, is a mere bagatelle.

BRITISH BEE-KEEPERS' ASSOCIATION.

The Annual General Meeting was held on Wednesday, February 8th, at 3.30 p.m., in the offices of the Royal Society for the Prevention of Cruelty to Animals, 105 Jermyn Street, St. James's, under the presidency of the Baroness Burdett-Coutts. The spacious Board-room was filled with a crowded audience of ladies and gentlemen, amongst whom were the Hon. and Rev. Henry and Mrs. Bligh, the Revs. Dr. Bartrum, J. L. Seager, F. T. Scott, G. Raynor, F. S. Sclater, and W. E. Burkitt, Captain Bush, R.N., and Messrs. Graham, Bellairs, Martin, Blow, Buller, Garratt, Andrews, Sambels, Hooker, Baldwin, Zehetmayr, Leigh, Groves-Watson, Henderson, and the Misses Gayton and Brandard.

The Secretary (Mr. J. Huckle) read the minutes of the last Annual General Meeting, which were confirmed.

The President: I have now to put a resolution before you which as regards the wording of it might be considered merely a matter of form, but I am quite sure it will evoke heartfelt emotion and sympathy in the minds of all true friends of the Association. It relates to the great loss which we and all bee-keepers have sustained in the untimely decease of an esteemed friend, the Rev. F. G. Jenyns. Last year we had a similar motion to propose when it was our painful duty to express regret on the death of Mr. Fox Kenworthy, and condole with his aged mother. That gentleman was one of the most active workers in our cause, and it was natural that he should have excited our affectionate regard. Those who only knew Mr. Jenyns as a supporter of this Association will feel we have lost a coadjutor competent to judge of all matters relating to bee-keeping, and one most anxious for the success and well-being of the institution. But his friends, among whom I may reckon myself, because I have seen a good deal of him, and had the pleasure of his company in relation with the Lytton family (Mr. Burdett-Coutts and I spend some time of the year in one of Colonel Bulwer's houses) can bear testimony to his many excellent qualities. I am able to say how greatly his loss has been regretted at Heydon, and how severe a blow his death was to those who knew him at home—Knebworth. We must all share this feeling, which our friends who remember his genial, kindly face and manly bearing, coupled with the highest intentions and uprightness of purpose, will the best understand and appreciate. With regard to Mr. Jenyns' works on apiculture, I think I am right in saying that they have not only been of great service to the special cause they were written to promote, but also to those kindred subjects of agriculture and education about which Parliament will probably be called on to specially legislate this year. I beg to move:—'That the members of the B.B.K.A., in Annual General Meeting assembled, desire to place on record their deep sense of the loss sustained by the Association in the death of the Rev. C. F. G. Jenyns, who for many years, until the time of his decease, was an active member of its General Committee, and in other ways rendered excellent service to the cause of British apiculture, especially by the publication of his well-known and highly appreciated educational work, entitled *A Book on Bees.* The meeting desires also to express its deep sympathy with Mrs. Jenyns and her bereaved family in the sudden and irreparable loss sustained by them.'

The Rev. J. L. Seager, in seconding the motion, said he felt in danger of forgetting how much the bee-keeping public owed to the late Mr. Jenyns, because he was too much occupied with the thought of his own personal loss in the decease of that estimable friend, whose home was within three miles of his own. He had grown to look on that gentleman as one of the wisest of all his acquaintance, a man to whom all of them might profitably turn to for advice in any difficulty, a man who possessed qualities comparatively rare in the world, for he (Mr. Seager) had never known him harbour an unkind thought against any one, or give expression to an angry or even a severe word. He was one of those who never sought popularity, and, as is nearly always a natural consequence, achieved popularity with all who came in contact with him. Every one who knew him was drawn towards him with a feeling of irresistible affection. He was ever ready to give advice, the best of advice, to all who desired it. In conclusion, he (the speaker) thought the meeting would heartily join with him and the President in expressing their sorrow at the loss of one of the most valuable members of the Association, because he was a good bee-keeper, and in every respect a sincerely good man.

The President moved, 'That the Report and balance-sheet issued for the year 1887 be received and adopted, with a vote of thanks to Mr. Kirchner, the auditor.'

The Report was taken as read, and after the resolution had been seconded, it was carried unanimously.

Mr. Garratt said he rose with feelings of great pleasure to propose the motion which stood No. 4 on the agenda. It was 'That this meeting tenders its hearty thanks to the retiring officers and Committee for their valuable services during the past year.' He felt sure that the audience would heartily concur in that expression of opinion, because they were all much indebted to the gentlemen referred to for the excellent assistance rendered by them to the bee-keeping world. The work of the past year has been carried on with its usual efficiency, and the interests of the Association had been carefully guarded and advanced.

Mr. Martin seconded the resolution, and expressed his opinion that the Committee deserved all the thanks bee-keepers could bestow on them for their disinterested labours.

The resolution was carried unanimously.

The Rev. G. Raynor proposed a vote of thanks to the Council of the Royal Society for the Prevention of Cruelty to Animals for the gratuitous use of their Board-room for Committee and other meetings. He said the obligations of the B.B.K.A. to the Royal Society had accumulated for some years past, and the Committee were especially thankful to their President (the Baroness) for having exerted her kind influence in this matter. What they would do if deprived of the use of the Society's room he could not say, but in any case serious expenses would be inevitable, therefore they were deeply indebted to the Society; and he trusted that, remembering one good turn deserves another, they would use their influence on behalf of the Society, which was doing excellent work.

The Rev. F. S. Selater, in seconding the motion, which was unanimously adopted, said that he could re-echo every word uttered by Mr. Raynor concerning the Association's indebtedness to the Royal Society for the Prevention of Cruelty to Animals.

The President returned thanks, and assured the meeting that the R. S. P. C. A., of which she was President of the Ladies' Committee, always felt great pleasure in lending their Council Room to an institution of a kindred character like the B.B.K.A., which was was engaged in the promotion of objects similar to its own.

The Rev. Dr. Bartrum moved the election of the President, Vice-Presidents, treasurer, auditor, analyst, librarian, and secretary for the year 1888, in accordance with Rule 8. As regarded the President no words of his were needed to advocate her re-election. They all recognised her as the good queen-bee, who never grew old, and never needed to be replaced. He could not bear to think of the terrible loss the Association would suffer if any circumstances were to cause her ladyship's withdrawal from it. The speaker then paid a tribute of admiration to each of the before-mentioned officers, highly commending them for the valuable services rendered by each to the cause of bee-culture, and concluded by proposing their re-election.

Captain Bush, R.N., seconded the resolution, which was unanimously passed.

The Secretary reported the names of the members nominated for election on the Committee for the year 1888, which were as follows:—

The Rev. E. Bartrum, D.D.; the Hon. and Rev. H. Bligh, Captain Bush, R.N.; Captain Campbell, Mr. Thomas W. Cowan, the Rev. E. Clay, the Rev. R. Errington, Mr. J. M. Hooker, Mr. H. Jonas, the Rev. F. G. Jenyns,* the Rev. Geo. Oddie, the Rev. Geo. Raynor, the Rev. F. S. Selater, the Rev. J. L. Seager, the Rev. F. T. Scott.

The Hon. and Rev. Henry Bligh said that the motion which he had to submit was simply intended to make the Rules more intelligible, and carry out the proposal decided on last year. In the place of Rule 8 he proposed to substitute Rules 8 and 9 as follows:—Rule 8. 'The Managing Committee shall be elected annually. Every candidate for election on the committee must be nominated by two members of the Association, upon a printed nomination paper to be obtained by application to the Secretary; such nomination paper must bear the signatures of the members so nominating, together with the signature of the nominee. Those so nominated shall be the committee-men for the year unless the nominations exceed the number to be elected, in which event the election shall be completed by voting papers, which shall be sent to each member of the Association. The names of the members nominated, together with the names of the nominators, shall be stated on the voting paper. Any vacancy that may occur during the year shall be filled up by the remaining members of the Committee.'

Rule 9. 'An Annual General Meeting of the members shall be held in each year as early as possible. The President, Vice-Presidents, trustees, treasurer, auditor, and secretary, shall be elected at this meeting, and questions of the government and management of the Association (of which at least fourteen days' notice has been given) shall be discussed and resolved upon.'

The Rev. F. T. Scott seconded the motion.

Mr. T. B. Blow moved the following amendment:—'That in case of any vacancy occurring in the committee, such vacancy be filled by election with voting papers in the ordinary way.'

Mr. Webster seconded the amendment, which was also supported by Mr. Baldwin.

The Rev. G. Raynor saw no cause for adopting Mr. Blow's suggestion, and deprecated the frequent alteration of rules, which in the present instance were working well. Mr. Bligh's proposal involved only verbal changes for the purpose of making the rules more perspicuous.

The Rev. Dr. Bartrum opposed the amendment, one of his objections being, that an election of the kind advocated by Mr. Blow would cost between 3*l.* and 4*l.*, which would be an unnecessary strain on the funds of the Association.

The discussion was continued by the President, Mr. Blow, the Rev. J. L. Seager, Mr. Garratt, Mr. Sambels, Mr. Webster, and Mr. Groves-Watson, after which the amendment was put to the meeting and lost by six votes, six being in favour and twelve against it.

The original motion was then put to the vote, and carried by a majority of twelve.

Mr. T. B. Blow moved: 'That the voting power of each member be limited to one vote, irrespective of amount of subscription.' He thought that proposal only just to the working classes, a large number of whom were only able to pay 5*s.* per annum. In their case that small subscription showed a genuine interest in the Association, and, in his opinion, represented far more than the guinea of the rich man, to whom money was no object. Besides, one man one vote was the general rule. The committee, who numbered fifteen, could command sixty votes, which almost enabled them to elect whomever they chose.

Mr. G. J. Buller, as a working man, and one who knew the feelings of the working classes on the question, seconded the motion.

The Rev. G. Raynor read an extract from a letter written to him by Mr. T. W. Cowan (Chairman), who, unfortunately, was not able to be present. Alluding to Mr. Blow's proposition, Mr. Cowan said: 'With regard to Resolution 9 I am quite sure this will be a wrong step to take, and would make it infinitely more difficult to get subscriptions than now. As long as I have anything to do with this Association, it must retain its philanthropic character. As soon as it becomes anything different I shall be obliged to leave it; it must be a society for promoting bee-keeping and nothing else.' He (Mr. Raynor) fully endorsed these opinions, which also represented the views of the late Mr. Peel, and should, therefore, strenuously oppose the motion.

Mr. Baldwin supported the resolution, and the Rev. Dr. Bartrum opposed it as being likely to chill charity, because many persons would be induced under the circumstances to lower their subscriptions, to the financial disadvantage of the Association.

The Rev. F. T. Scott and the Rev. J. L. Seager disputed the statement that the custom of one man one vote was now universal, the former quoting the case of orphan and other asylums, in which subscribers were

* Since died.

allowed votes in proportion to the amount of subscription paid by them; and the latter stating that under the Public Health Act the number of votes was regulated according to the amount of rates paid. It was only fair that those who subscribed most largely should have the largest share in deciding how the money should be spent.

After a few words from Messrs. Blow and Buller, the motion was put to the meeting and negatived by twenty votes to ten.

Mr. W. M. Graham moved: 'That the rules be so altered that any subscriber of five shillings per annum shall be eligible for election to serve on the Committee.' He had no ambition to serve on the Committee, and was acting entirely from disinterested motives; but he thought the members of Committee should consist of all classes.

Mr. Baldwin seconded the motion, which was supported by Mr. Blow, who considered, without desiring to be offensive, that the Committee consisted too much of one class.

The Rev. G. Raynor said that the qualification was lowered last year from 1*l.* to 10*s.* on his proposition. He thought they had not yet given the present system a sufficiently fair trial to justify any alteration thereof. Any gentleman who could afford the time and expense of attending Committee meetings was able to pay 10*s.* yearly in support of the Association.

After a few words from Mr. Graham, Mr. Blow, Captain Bush, and the President, a vote was taken on the resolution, which was lost by a majority of five, the numbers being eight in favour and thirteen against.

Item No. 11 on the agenda, to be proposed by Mr. Graham as follows:—'That the Committee be enlarged from fifteen to twenty, and that the five new seats thus created be filled up by the votes of the County Representatives and the County Secretaries,' was withdrawn by permission.

Mr. T. B. Blow proposed: 'That any person who has sold or assigned the right of manufacture, or sale of any appliance designed or invented by the said person, shall not be qualified to act in the capacity of judge.' He brought no charges against anyone, but he thought it desirable that the Association should have a rule like the one he suggested, so that even an appearance of favouritism might be avoided.

Mr. Buller seconded the motion.

The Rev. G. Raynor said the rule, if passed, would disqualify Mr. Cowan and himself from acting as judges, as well as several of the best-known authorities in apiculture.

Mr. Garratt objected to the far-reaching character of the proposed rule, which would exclude some of the best judges, those who had been in the van of bee-keeping for many years.

The President considered that the interests involved in the motion were so great that a more careful and prolonged study of them was necessary before a decision should be arrived at, and she, therefore, suggested that the subject should be postponed for the present. She had never invented or assigned an appliance, and was, therefore, quite disinterested. (Laughter.)

A short conversation ensued, and eventually Mr. Blow consented to withdraw his motion.

Item No. 13, thus: 'That attention be called to a petition sent to the Committee (receipt of which was acknowledged on November 17th), and to the subsequent action of Mr. J. M. Hooker with regard to the said petition,' was withdrawn from the agenda on the application of Mr. Blow and Mr. Baldwin.

The Hon. and Rev. H. Bligh and the Rev. G. Raynor moved and seconded a hearty vote of thanks to the Baroness for her kindness in presiding.

The President expressed her best thanks to the members for their kindness in re-electing her, she also appreciated the complimentary title of queen-bee. It was an immense pleasure for her to come to the meetings, and help, however slightly, in the development of a growing and important industry. She had lately spent a considerable time in the country, and was glad to note that the interest in bee-culture, far from abating, was growing rapidly. Perhaps that could be accounted for to some extent by the fact that everybody felt interested in that which gave them profit. No doubt people living in the country, particularly farmers, labourers, as well as persons of small means, had found they could add to their income by bee-keeping; such individuals were naturally anxious to dispose of their honey, and she thought the B. B. K. A. would do well to consider how they could best make known far and wide where a ready market could be found for such produce. But apart from monetary considerations, bee-keeping was looked upon to a great extent as a wholesome recreation—one of those innocent pleasures, of which the world was very full, if one only sought after them. It was a source of amusement and instruction, giving relief to mind and body after the day's work was over. No one could deny that the bees taught many lessons to those who watched their curious habits, order, system of government, all of which they inherited by nature and instinct. She could only hope that the efforts of their philanthropic Association would be rewarded with a higher measure of success, and that the exports and imports of honey would increase. She could heartily congratulate them on the excellent work already accomplished, for it could not be doubted that they had largely educated the working classes in regard to the science and utility of bee-keeping, one result of which was that the old custom of smothering the bees had been abolished. Her Ladyship then referred to some Bills which would be brought before Parliament during the present session, notably one by Mr. Jesse Collings, M.P., for the better adaptation of education in the country to agricultural purposes; and she hoped some effort would be made by means of that measure to advance the bee industry amongst a class who were suffering greatly from depression at the present time. Her Ladyship also alluded to the fact that a schoolmaster near Faversham, taking advantage of the Elementary Education Act, which permitted the teaching of extra subjects, had selected bee-keeping as one of these. The Inspector sanctioned this, but the Board had afterwards objected thereto. She had consequently undertaken to see Lord Cross on that matter, and endeavour to influence him in favour of introducing the subject into reading lessons. The Baroness concluded by wishing the members a prosperous new year (loud cheers).

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

COUNTY BEE-KEEPERS' ASSOCIATIONS.

[1484.] On the subject of benefits conferred by the County Bee-keeping Associations on their members, I would like to add a testimony from my own experience as local Secretary. 'The Herefordshire Secretary' (1455) speaks of the 'waste of energy in attempts to help the cottager.' Scores of such instances may be brought forward, some most ludicrous in their results, while

others are so depressing as to deter any further attempts. But I hope to show that there is too often a fundamental mistake in the aim and object offered to the cottager. They have hardships enough to struggle against without deluding them into false hopes of immediate gain, &c.

Living in an agricultural district as I do, I find that this new teaching of the art of bee-keeping has been a God-send to the class, which has the most natural right to understand it and profit by it, though hitherto debarred from the means of studying it as a science until the B. B. Association was formed and spread its ramifications all over England. It is like a revelation to them. It has opened up a new trade and a new handicraft to them. It has developed their powers of observation and excited their ingenuity in the very tastes most congenial to their habits of life.

Organizations are the spirit of the age, and I know of none more calculated to strike deep into the hearts of the labouring class of all agricultural districts of England than the British Bee-keepers' Association, or more worthy of being powerfully supported for the good of all. As far as we local secretaries can help to improve the organization, let us take hold of this as a motive for willing co-operation, remembering that the cry of distress and depression of the farming trade is still painfully felt in our districts, and let us feel it an honour to be chosen as advocates of such a beneficial association.

The gratitude of most of our members to the British Bee-keepers' Association for having introduced them to such an interesting as well as a profitable occupation wins over new converts year by year. There may be small advance numerically in the yearly list of members, but I do not look on that as a mark of deterioration, because only those who entered the lists carelessly and with no real object have dropped out of the ranks, whereas the keenly interested stay on and become firm supporters of improvements and suggestions from head-quarters, and draw in others who gradually see the advantage of these improved methods. To obtain the like advantages and to enjoy the social meetings, lectures, &c., these new ones willingly consent to join the Association. The spirit of emulation becomes stronger, the desire for competition in any form is easily excited, and when rewarded by an honourable mention (as has happened in our case) in your popular *Journal* as well as in our county's report, in the latter of which these italicised words are used referring to our Apiary Competition having 'indirectly strengthened the hold of the Association on its rural members. *Besides this, the advantage was secured of bringing into prominence, in a concrete form, the benefits of applied science.*' I think it may fairly be said that the *bonâ fide* cottager of the present day is not so ungetatable or uneducated as he is said to be.

The stimulus to good and interesting reading is a remarkable feature in the work of the Association, and is another proof of the zeal among the same class. A few of our members prefer subscribing among themselves for the *British Bee Journal*, finding its expense none too great in comparison with the amount of useful hints contained. Another copy, given as a present by a friend for members' use only, is circulated weekly, and eagerly read; and it was particularly noticed that the apiaries which were most praised last year for neatness and order belonged to cottagers who were regular readers of your excellent *Journal*. Surely the Herefordshire Secretary (in 1480) has misunderstood the '2*s.* 6*d.* subscriber!' The cottagers' annual subscription to the Association is only 1*s.*, and if he only adds 1*s.* 6*d.* to that, he will then become entitled to the new monthly journal, sent post free. Any other subscriber by paying this additional sum will reap the same advantage. I have left much unsaid for fear of trespassing on your space, especially as regards the gratitude I owe to our County Secretary for his forbearance with my inexperience of the duties of a Secretary the first two years.—F. H., *Local Secretary.*

CONSANGUINITY.

[1485.] I have read with very much interest the articles that have appeared in the *Journal* referring to the breeding of bees. I have long since seen the advisability—I might say the necessity—for infusion of fresh blood; and to prevent, as far as possible, in-and-in breeding, fresh blood is annually introduced into my apiary by means of purchased swarms in summer or driven bees in the autumn. Consequently my apiary of thirty stocks consists of bees from at least a dozen different places, whereby the chances of consanguinity are considerably reduced although of course not entirely obviated. I have many times wished that some simple uncomplicated method could be devised which would enable us to cross our bees as readily as we can our poultry or other live stock, but I fear that happy day has not yet arrived.

If it is true, as we have good reasons to suppose, that the progeny of a given queen inherit the characteristics of the drone with which the queen was mated rather than those of the queen herself, it is evident that the selection of drones must, as is so ably pointed out at page 58, last week's *Journal*, receive special and very careful attention. The writer of the article referred to suggests that the bee-keeper should purchase a Ligurian, or some other foreign queen, from which drones should be raised for the purpose of mating with black queens. Drone-breeding from the rest of the stocks in the apiary is to be suppressed, and any drones that may chance to come into existence, in spite of the precautions taken by the bee-keeper, are to be trapped.

I am not going to say that such cannot be done; possibly it can by those who are able to devote the whole of their time to bee-culture. But we who have our daily duties to attend to, consisting of from twelve to fourteen hours per day, in addition to the garden, poultry-yard, and necessary work in the apiary, which at the time referred to is of a very primary nature, would be very reluctant to undertake the task of keeping twenty-nine out of thirty stocks entirely free from drones. But even if one could thus control drone-breeding in his own apiary, the chances of failure would be very great indeed unless the bee-keeper happened to live in a district where no other bees but his own are kept; an occurrence which, I should say, is very rare indeed. We ordinary bee-keepers will therefore have to await the invention of a more simple method before we improve the breed of our bees by the introduction of Ligurian or other expensive queens.

In his able and most interesting article (1454) Mr. Webster advocates the purchasing of virgin queens to be fertilised in the owner's apiary; but if we follow such a course and the queens purchased be of any of the foreign races, we shall, according to the article on 'The Coming Bee,' page 58, be propagating the very evils which we are most anxious should not exist. The only solution then of this important, interesting, but difficult problem, would appear to be the establishing of isolated apiaries containing only one kind of bee to which our virgin queens could be taken to be fertilised. But then the difficult question arises, Where are these isolated spots to be found? Query—Is it absolutely necessary that the drones and queens that we wish to mate should be kept at least two miles from any other bees?

I have an allotment which is at least three-quarters of a mile from my apiary, and my own bees are the nearest of any to the spot named. I should like to set there a stock of foreign bees and raise from the same as many drones as possible, and then raise queens from the best stock in my apiary and take them to the allotment to be fertilised. Will some one who has had experience in the matter be good enough to tell me if I should be likely to succeed? Up to the present I have had nothing to do with foreign bees on account of the unfavourable opinions expressed by those who have paid very dear for their ex-

perience. But of course judicious *versus* indiscriminate crossing may make all the difference between improving and deteriorating a race of bees.—A. Sharp.

CONSANGUINITY.

[1486.] The article of Mr. Webster on above subject seems to me to be rather strained taking it on the whole. He says our despised blacks could be renovated by the means he points out, and proceeds to call attention to the successful crossing with aliens as increasing the honey yield at once. I contend that our bees (English, I mean) do not require renovating, they are the result, and a good living specimen they are, of the doctrine of the 'survival of the fittest,' and no recent or living writer has been able to prove that they have deteriorated in any point of excellence which they may have inherited from their ancestors. Would Mr. Webster, or any other writer, assert that the introduction of foreign blood by the inter-marriage of his or their offspring with the natives of Italy or the swarthy nomads of Eastern lands would improve the species either socially or intellectually? Where and among what people do we find in the world's history greater acts of prowess, more heroic acts of endurance than in the annals of our own native land? Who would, I ask, except Englishmen, hold out in a besieged fortress until the uppers of their boots were consumed to satisfy craving hunger? And as the continual reiteration of the superior (?) qualities of foreign bees over the native race is made principally in the interest of dealers, I should like to ask if those queen-breeders in Palestine, Cyprus, Liguria, and other places, ever dream of sending for a supply of good, hardy English queens to improve their strain of bees?—I pause for an answer.

Mr. Webster takes birds first (page 62) to prove the baneful effects of in-and-in breeding, probably his deduction may be correct *re* the Barbary dove, but looking at the results achieved, was not the effect the result of design in the man to test the recreative powers in the dove? Where is Nature in the matter? simply perverted, I might say *non est*. I maintain if those doves had been in their natural state, and not forced by man to mate in confinement, probably without any billing and cooing, that they would not have died out in the fourth generation. And if friend Webster, or any one else, intends studying physiology, let him undertake it in the wide realms of nature, and not in the circumscribed area of a birdcage or the revolving wire drum of the imprisoned squirrel, neither in a confined space occupied by a pair of white mice or foreign rats.

May I ask Mr. Webster whence he gets his deductions that man begins to succumb to the baleful effects of consanguinity in the second generation? I think the present rather large population of the earth will refute him in his assertion, unless he can prove there was other inhabitants besides father Adam. If there was, or had been, even the possibility of mankind dying out by close consanguinity, would not the Allwise Creator have provided some other way or means of peopling the earth than the command to our first parents—'Go forth and multiply?' That was one of the first commands, and, judging by results, has evidently been the command most obeyed by the *genus homo*.

Then, in next paragraph, Mr. Webster speaks so confidently of the consequences to an apiary by the neglect of an owner in not introducing new blood, referring especially to the depreciation, then deterioration, and finally annihilation; though I give him credit for the admission that the *finale* will or may not occur till—shall I say—the crack of doom. Then he concludes his article by reference to location, compelling in-and-in breeding and the evil results arising therefrom, winding up with examples. So far so good, but when those examples can be refuted *in toto* by other examples in direct contradiction, I think bee-keepers will not be so ready to be frightened by a bogey.

I give two cases that I have investigated this past week in the interests of bee-keepers, and I feel sure that, knowing both the parties personally and supplying the information first hand, that in-and-in breeding *does not deteriorate* the race of English bees as regards their size, working qualities or prolificness, though it should run on decade after decade and generation after generation of owners. In the first instance I walked several miles to see an old bee-keeper, who lives about seven miles from everywhere, or rather from any town or railway station. When I say old I do not mean that he is an octogenarian. Though probably he has seen sixty swarming seasons, I found him in full vigour of health plying his vocation as gardener and handyman on the farm. Our first greeting over our conversation naturally turned to bees, and after a few mutual inquiries I said to him, 'How long have you kept bees here?' 'All my lifetime, and my father before me, and my grandfather before him; they both lived in the same cottage and the bees always have stood in the same place, and I can tell you how my grandfather first had them. His master died at the farm, and when the sale took place his mistress (the farmer's widow) gave him a smart (a second swarm), and we have had them ever since.' 'Have you ever lost them by disease, or otherwise?' 'No, never. Those you now see are the same strain of bees my old grandfather started with.' 'How many do you generally leave to stand the winter?' 'Five.' 'Do you find them profitable?' 'Well,' he says, with a sly twinkle in his eye, 'I shouldn't tell every one, but I have made 6*l.* this year and twenty gallons of drink for the winter; but you see,' he added, 'I make all my hives, stools, and hackles, so that I have no expense with them.'

Now, here we have an instance of bees breeding in-and-in for three generations because of the isolation of the apiary. Yet here they are as prolific and as profitable as if the owner had spent every penny of his profits year after year in foreign or other queens, and where are the dire effects propounded by Mr. W.?—W. Woodley.

(*To be continued.*)

NEW METHOD OF FIXING FOUNDATION IN SECTIONS.

[1487.] In the last issue of the *B. B. J.* I notice a claim by Messrs. Abbott Bros. as the inventors of a new method of fixing comb foundation in sections, by means of an angular cut through the top (?) of the section. I beg to state that I have for some considerable time used and sold sections cut in a very similar manner, the only difference being in the shape of the cut itself; that shown on page 72, No. 204, volume xvi., being larger at the top than at the bottom, whereas the cut used by me is the same all through.

I used to make a vertical cut, and that answered very well with sections in pieces, as a lateral pressure could be put on the unfixed half, so as to give a firm grip to the foundation before nailing; but when I endeavoured to fix foundation by means of a vertical cut in the one-piece sections, I experienced difficulties, because if the divided parts were pulled apart sufficient to admit the foundation, they often broke at the V joint, and if not so opened, when putting the unfolded half into position there was a constant tendency to displace the foundation by downward pressure.

To remedy these evils I made many experiments, and ultimately found that by cutting through the section at an angle of about 45° and the use of a wooden block similar to the block used when nailing sections, the sheets of foundations could be put in position and securely fixed, more expeditiously than by any other plan.

I may here mention that I have written Messrs. Abbott Bros. informing them of the similarity in the methods used by them now and that used by myself for a long time. I do not wish in any way to impute that my plan has been copied. It is, however, a lesson worth remembering.—S. J. Baldwin.

'NOTHING NEW UNDER THE SUN.'—FIXING COMB-FOUNDATION.

[1488.] I see Messrs. Abbott are about to patent an invention I have worked out and improved long ago. The proof page of my 1888 Catalogue (yet in printer's hands) concerning angular cut rail, and foundation groove to sections, will show that I have a right to make and sell sections so treated.

I enclose you drawings nine months old (which please return) showing the said application to one-piece sections, and also to bar-frames. Is further testimony wanted? I will give names and addresses of those now far from Holme Apiary to whom I showed the invention.

The cut to top rail of section, at an angle of 45°, is all sufficient for holding the foundation, but side and bottom grooves are necessary to keep full sheets from buckling, and so treated the one-piece section is ahead in foundation-fixing of any section yet introduced. Yet this I have superseded, and have a method which will not only give fixing of foundation to sections and frames, but also securely against displacement of the honey and comb when filled, even should it so happen 'the Man in the Moon' (?) had an accident in his apiary and dropped a crate of well-filled and finished sections to Mother Earth. From what I know concerning inventions in useful bee appliances, I judge none would hold an argument supporting a patent, neither should there be if all the philanthropy given forth in the direction of bee-keeping is taken into consideration.—John H. Howard, *The Model Apiary, Holme, Peterborough.*

[We have inspected the drawings Mr. Howard has kindly forwarded to us, and have been struck by the many ingenious contrivances he has discovered for the greater ease in apiculture. Among others there is the top rail of a section cut through at an angle of 45°. Messrs. Abbott's section has the angle rather wider at the top, affording a stronger grip.

We have received a communication from Mr. Bonner Chambers to the same effect as Mr. Howard's letter. He further says, 'From exceedingly careful experiments I have come to the conclusion that perfectly filled sections cannot be obtained without the aid of full sheets of foundation; this, I find, is a fact that has been recognised only for about the past two years, and is a point little known at present; hence the few arrangements that have been made, or even suggested, for fixing full sheets—the sort of foundation manufactured also not allowing full sheets being used until recently.

Mr. C. J. H. Fitch, of Sible Hedingham, and others, inform us that they have for the last two years had the identical plan of Messrs. Abbott in operation, and have sent out a vast number of sections filled with the guides so fixed.

Messrs. Abbott Bros. inform us that they have received numerous applications from all parts of the country from persons claiming to have previously invented their new mode of fixing comb foundation in sections; but after inquiry, every statement has proved incorrect, and the cut alluded to being in every instance the simple straight cut that was invented about the same time as one-piece sections. One would hardly expect a bee-keeper making such an important discovery would omit to let his fellow bee-keepers remain long uninformed.—Ed.]

THE PREVENTION OF INCREASE.

Number Three.

[1489.] In working for extracted honey, the prevention of increase is easily accomplished by a judicious management in tiering up and extracting. But when we come to the production of comb-honey, no system of management has as yet succeeded in absolutely preventing increase. There are, however, different methods of manipulation that tend to decrease swarming; but why try to entirely prevent swarming? Prevent it as far as is consistent with the largest amount of nice comb-honey, and then make use of the swarms *à la* Hutchinson, and double up in the fall.

Of the different methods tending to prevent swarming, I will offer the following as being with me the most successful.

I use Heddon's sectional hive, but my system of management can be varied to suit the workings of any hive. We will imagine white clover in full bloom and a good colony of bees occupying two sections of the Heddon hive, with honey-board and one section case on, the latter being about half full of honey; now lift off the section-case and one of the brood-cases, and from the case now remaining take four of the frames having the least amount of brood, crowding two to each side of the hive of the four remaining, and in the centre place four frames having a foundation starter half an inch wide, readjust your hive, and in about three days they will be ready for another case of sections, and as soon as the four frames below become filled with comb cut it out with the exception of half an inch for a starter, and replace them, making use of the comb removed to fill your sections. Thus by a judicious tiering of section-cases and the removal of the comb in the four above-mentioned frames when about three-fourths full, not more than twelve per cent will swarm.

The four frames of brood and honey first removed can be tiered up on a few colonies and will be filled with nice stores for winter.—C. Solveson, *Nashatah, Wis.* (*The American Apiculturist.*)

THE COMING BEE.

[1490.] I seldom read anything with greater pleasure than that which I felt on reading your article on 'The Coming Bee,' on page 58. I have long held the opinion that the present system of introducing foreign queens was radically wrong, and four years ago I destroyed my own and re-queened with blacks, and since that time have done my best to keep them pure, not because I believe them to be the best bee to be obtained eventually, but because I believe that the present system, or want of system, in importing all and every kind of queens that are advertised will eventually leave us with a race of mongrels, perhaps good, but according to my experience more probably bad. With cattle and poultry, &c., the crossing of the various breeds is easily controlled; with bees it is not so, and the ordinary bee-keeper with a few hives seldom exercises any control over the mating of his queens and drones. He purchases a queen because it is the fashion, introduces her to his best stock, makes swarms and gets a lot of hybrids. This is all very well so far, but the next year his hybrids go and hybridise his neighbours' bees, and very soon the neighbourhood is filled with vicious wretches, and bee-keeping loses part of its charm for want of a systematic method of trying to improve the race in place of the indiscriminate haphazard fashion now in vogue.

Our cousins at the Antipodes have set us a good example in keeping an island entirely for one race of bees, and I hope that some systematic plan will be adopted in England for raising the best possible race; and I think 'specialisation' in queen-rearing ought to be supported by bee-keepers. Surely it will be better to

purchase home-bred queens which are thoroughly acclimatised from 'specialists,' providing they can supply bees of a reliable standard of excellence, than sending money abroad, draining the pockets for the benefit of foreigners. Our Bee-keepers' Associations are formed for the purpose of teaching people how to keep money at home instead of sending it abroad for foreign honey: therefore, why send half the profit to the foreigner for his queens? I am not satisfied with my blacks altogether, but they are a better all-round bee than some of the mongrels I have come in contact with; and as I have not much time for attempting to improve by introducing foreign blood I shall keep them as pure as I can, and hope that the specialist will be able to offer us a better inthe not very distant future.—W. Coxon, *Ambaston, near Derby.*

HOW TO DESTROY WASPS.—(1432 and 1459.)

[1491.] Your correspondent F. Goodrich says that with his pickle-bottle he entrapped as many bees as wasps. I think I can teach him, and perhaps some others, 'a more excellent way.' Bees will scarcely ever go to the back of the hive to feed! If, therefore, the pickle-bottle be placed there, it will speedily be filled with wasps without a bee! If, however, the bee-hives are placed in rows, one before the others, of course the back one becomes the front of the other and the plan will not work so well, but even in this case by placing the bottle quite in the middle of the back of the hive the bees will very rarely interfere with the pleasure of the wasps.—C. C. P., *Valentia, Co. Kerry.*

HIS FIRST FRAME HIVE.

[1492.] About the middle of May, 1886, I was at a place about six miles from Ripon. While there, I called to see a bee-keeper, living in a neat cottage with a nice garden in front, in which he kept his bees; there were about six hives in all. He was pleased to see me, as he wanted some one to tell him how to put a swarm into a frame-hive he had managed to get. So he took me to see the hive, and explain to him how to put his first swarm into it. It was a pattern of the Cowan hive, rather clumsy, but still a serviceable hive. 'I've got it ready "baited,"' says he, as he pointed to the strip of foundation in each frame, 'now tell me what to do.' I explained to him how to hive the swarm in the usual way: put it on the stand the new hive had to occupy, then in the evening to shake them on a board in front of the hive and let them run in. He promised he would do just as I had told him. About the end of July I was there again, so I called to see how he had got on with his bees. He had had several swarms—the first he had put in his frame-hive. He asked me to look at it, and took off the top. Oh, what a sight!—the quilt not right on, frames on the top of each other, some with the metal ends off, the combs were built all ways. Now this is how it had been done. The swarm settled on a bush just the height of the garden wall, so he took the hive body and put it on the wall wrong side up to let the swarm run in: the frames in that way being all upset. I could do nothing with them as I had no veil. I can assure you I turned away from that garden, wishing it, at least, had never possessed a frame-hive. I was not surprised when I heard that this bee-keeper had said, later on, that he liked skeps better than the new hives.—John Wharton, *Honey Cott, Hawes, Yorkshire.*

DRONES.

[1493.] I am glad to see an article in your *Journal* setting forth some of the excellences of the drone bee, for, although a bee-keeper of only four or five years' standing, I have arrived at the conclusion, rightly or wrongly I know not, that in our anxiety to have good queens at the head of our colonies, we have, or nearly so, overlooked the fact that good kings are equally to be had in reverence.

Would it not be interesting, perhaps profitable, if some of our more advanced brethren would discuss, through the *Journal*, not only *what drones are the best after careful crossing and recrossing*, but unravel for us, who are merely babes yet, the other duties of the drone bees, which, according to some people's ideas, are many, to others few, to others none? One can hardly be persuaded to believe that they are brought into existence as the swarming season approaches solely for the purpose of mating with the young princesses. If this were their only use, then, as some tell us, a smaller quantity of better quality would, perhaps, answer the purpose. *But is it so?* I suppose those colonies that are the most forward in the spring are the first to raise and send out drones. Is this the standard rule between strong and weak stocks, or is there some other reason? For bees, like most human beings, have a reason; ought I to say, on the part of the bee, *instinct?*

Are we doing exactly the right kind of thing in a hive of say ten frames when we use ten sheets, or nearly so, of worker foundation? Might it not be discovered some day that a little drone foundation given to each hive is helpful instead of baneful, even if it did help to fill the hive with the worthless, honey-eating, lazy drone! I have one hive—No. 4—which has been, and I am expecting will be again this year, the best of my nine. It was the largest swarm I ever saw, when it came into my possession on the 31st May, three or four years ago, and gave good account of itself; same year I sent out a swarm as well. This last season it gave me about 100lbs. of splendid honey (extracted) on the tiering-up system; and had there been any yield from the limes, I did hope to have got 30lbs. more, but they failed on account of the drought. I noticed in this hive, particularly, the large number of drones it sent out, or rather went in and out of it; no doubt that hive was their right home; and also, although they might be seen flying by hundreds on a fine day, there still seemed anxiety on the part of the bees to raise more, for, as the supers went on, drone-comb was built in nearly every bit of space where worker foundation did not intrude itself. Of course, I allow no breeding above-deck. As there is queen-and-drone prevention for all my hives, with bee-space above and below, I do not find the bees object to it, nor has there a queen ever got through to my knowledge. Other hives that only yielded, say about 30lbs. of honey, were nearly destitute of drones. I give this for what it is worth; perhaps some one else may have something to say on the subject more experienced than myself.—J. W. Blankley, *Denton, Lincolnshire.*

BEE-KEEPING IN MALTA.

[1494.] You ask me in your number of 5th January for any particulars of bee-keeping in Malta. At present I believe I am the only frame-hive owner in the island, unless the Rev. Fathers at the Jesuit College have them. The natives keep bees largely in earthenware pots, about a foot in diameter and 1½ long, shaped like a stump-necked bottle, the mouth being filled by a stone bung with four channels for the bees to pass through: but this they invariably refuse to do, and prefer to use the big end, which is simply covered loosely with a board, the pot being on its side, and generally on the ground, and under a tree. Consequently you can imagine the assortment of creatures to be found inside. They take the honey and wax once a-year, and leave little or no stores, and are astonished at the loss in numbers during the autumn.

My brother started three or four frame-hives late last year. One, the first, is in very good order; the

other very weak, but breeding fast, and they are getting in pollen in greater quantities already. I have made myself two hives, but on account of the great heat in summer and the temperate winter, I have not stuck to the English form quite.

My hive proper is single-walled, ¾ in. stuff, and this I place in a large box on legs, giving quite 3-in. room all round, with roof to lift or hinge, raintight but not air-tight. To allow of a current of air in the summer, I intend boring holes in the outer case low down, and covering with perforated zinc, and leaving the tops slightly open during the day; and if I find the sun's rays too powerful, propose having a hood like a child's perambulator to draw over to shade the south side. The natives simply cover with grass mats, but these I do not fancy, as the ants and insects are in legions, and will harbour in them. Ants are a pest, but they are get-at-able. Hornets, however, are the enemies. Last year nearly 400 were killed round the hives. I am trying to devise a plan to lessen the evil, and offer a reward for each nest, or for each dozen of dead hornets. I do not like the Palestine dodge of smoke.

The bees themselves appear to be docile, but I am told that at certain seasons they get vicious. I fancy orange blossom and karob bloom affect them. They have, as far as my inexperience goes, all the appearance of Cyprian bees, yellow bands, &c., and fly in any weather almost. I sent some dead ones to Mr. Baldwin lately to look at, and if I visit England in the summer, shall try and bring a hive with me for examination by experts. The natives, as usual, are superstitious, and object, as a rule, to their hives being looked at, and I have difficulty in getting information. They laugh at my hives, and the trouble I take, and also the feeding, but I hope by the time the Agricultural Show takes place to have some frames and sections to show, and some extracted honey, and perhaps a hive; but wax as yet beats me, I cannot get it clean. Certainly I have only smelted down old black combs and scraps hitherto, and if any one could give me a few hints I should be grateful.

There is no question about it being a splendid place for a bee-farm. The winter is so mild that no wintering, other than feeding, and perhaps a stopping-up of draughts, is necessary, and already the honey is being gathered, white broom, mignonette, and other flowers being out. Later on the *sulla*, or crimson clover, will give a harvest, and orange and other plants until the end of August. From September I expect to have to feed a little, and during the heat water is the difficulty.

I am so afraid that the heat will cause heavy combs to drop that in fixing foundation I make the sides of top-bars moveable, then fix the sheet with glue on both sides, and screw the moveable piece back. Some I have tried without glue, and am waiting for results. I find screws are necessary, as the wood is so liable to warp that nails and tacks do not hold.

I have planted white clover and limnanthes, but I do not think they will do. In some parts of the island wild thyme grows freely, and some keepers move their bees to this, which comes much later.

Should I find out anything interesting or queer as I get along I will let you know.—MALTA.

A USEFUL SUGGESTION.

[1495.] Let me suggest to some one with leisure to draw up some striking handbills, which in the present time of cheap printing are produced at marvellously low prices. Most of the matter could be culled from the many useful hints which appear in the *Journal:* for instance, 'The Cure of Bronchitis,' from your correspondent last week. These could be distributed through the local secretaries, or the plan might be extended to print at foot the name of the retailer or the bee-keeper at a slight extra cost. In large quantities a bill 7 in. by 5 in. could be produced at about 1s. per thousand; or if a better bill is necessary estimates could be asked for and the result published for the benefit of all interested in the sale of honey.

I am not writing without some knowledge of how honey can be sold, as my turn-out approached nearly two tons in the last nine months. If the suggestion is worth anything I shall be glad to send my idea of a bill, and perhaps others will follow suit.—H. J. B.

THE TIME TEST.

[1496.] Last autumn I made my first—and last—attempt to obtain the third-class expert's certificate. Much to my disgust, owing to the time test, I failed, being considerably longer than the stipulated time in finding her majesty. Now, whether or not my examiner could have found her earlier I know not. This I do know, that if he could honestly have passed me under the present rules he would have done so; but, though most flattering were his expressions as to my general fitness, he was bound by the watch. I cannot say I was less annoyed when I remembered that at the previous examination held here, a gentleman who was examined in my presence passed *who did not find the queen at all*—but it was under another examiner. On the day of my inglorious attempt, one of the best, if not the best, manipulators I know actually drove and found in *twice the time* I occupied; but he was not up for examination. Like all bee-keepers who have done much driving, I have had good and bad drives, but from the experience thus gained, anything so uncertain as a *time test* is most unfair when a *style test* would settle the matter at once. —H. J. B., *Southgate*.

QUEEN-BREEDING.

[1497.] I think the best plan to remedy the ill effects of in-and-in breeding is that given by Mr. Edey, page 49 of the present volume, in which he says, 'that frames of wired comb containing eggs have been invariably successful when subjected to proper treatment after arrival.' Bee-keepers could with advantage, and very little expense or labour, exchange eggs to raise queens from, and thus prevent in-and-in breeding by the following plan, which I think would be successful if proper care be taken.

Take your best stock which you wish to breed from, and insert in the middle of brood-nest a frame of 1½ inches sections containing new comb, and as soon as filled with eggs remove with the adherent bees, taking care not to take the queen with them, and put in Woodley's tin section case, making a hole or two with a pricker for ventilation. Tie a cord round to secure the lid and forward by rail at once. The contents being visible they will be handled with great care and the attendant bees will prevent the eggs from being chilled. My opinion is that eggs sent without attendant bees will not raise such strong queens as those which have had sufficient bees to keep them on even temperature. As small a number of sections containing eggs may be obtained as desired by filling the frame up with sections having ½ inch starters only where you do not want the queen to lay, which may be removed to other hives worked for comb honey when you remove the section of comb containing eggs. In one section there would be sufficient eggs to raise at least thirty queens on Mr. Alley's plan, as given in his book on *Queen-rearing* and as practised by Mr. Pometta in Italy (*A Bee-keeper's Experience in the East*).

In conclusion I would recommend those that exchange eggs to inform those to whom they are sending them when they are about to forward them, so that all may be in readiness to insert the eggs in the hive immediately after arrival, and be careful to accept no eggs from a district in which there is foul brood.—A. WOODHEAD, *Goole*.

Echoes from the Hives.

Twynholm, Kirkcudbrightshire, Feb. 6th.—Seeing it is a long time since you had a 'bit' of jotting from me, I thought it would not be entirely out of place—at this, the beginning of another bee-season—to inform you how 'our pets' have survived the past winter in this corner of the kingdom. The 'deaths,' as far as I can learn, are at present very few; and I have only lost one out of eight hives, and that through utter starvation, it being a driven colony that refused to take the food supplied and therefore had to pay the penalty. Saturday, Feb. 4th, was very mild, and warm gleams of sunshine tempted the bees forth for a cleansing flight and in search of pollen, of which I saw some collected from the snowdrops, and which is a fortnight earlier than the first I noticed last year. Bar-frame hives are gaining ground here now, since I got an 'Abbott's Combination,' and old-fashioned notions are getting rooted out; thanks to the *B. B. J.* I am 'given down' by some people here to be 'daft aboot bees;' and one old woman had the 'cheek' to tell me, 'if my ghost was seen onywhaur it wad be amang thae bee hooses' (that's always some consolation for the future at any rate); but when the honey-taking season comes on, and anti-bee-keepers get a 'taste' of the precious nectar, 'thae blessed bees' are transformed into 'wonderfu' wee craturs.' Hoping you will excuse me for spinning such a long yarn, yours, BONNIE SCOTLAND.

Honey Cott, Hawes, North Yorkshire, February 9th.—To-day with us has been a beautiful day. The bees have had a good cleansing flight. All my stocks so far have passed the winter safely. The snowdrops have commenced to bloom, and I noticed to-day that several bees were gathering loads of pollen from them. This is earlier than any other season I can remember for them to begin pollen-gathering in this cold and backward climate. Last year they took in the first grain on the 19th February, in 1886 on the 25th March, in 1885 on the 13th March. After such an early start may all bee-keepers have a prosperous year is the wish of—JOHN WHARTON.

NOTICES TO CORRESPONDENTS & INQUIRERS.

'ASPIRO.'—1. *Heather Honey.*—Heather blooming after nearly all other honey-producing flowers have ceased, renders it very easy to keep the former distinct from the latter, therefore you should 'run' your colonies for clover at the commencement of the season, and and after prepare for the heather-flow. This is done by most advanced bee-keepers in the north. When sojourning in North England and South Scotland we paid particular attention to this subject, and found that the best results were obtained in the following manner: The hives were provided with section-racks at the commencement of the clover-flow, and just before the heather bloomed as many of the sections that had been filled with clover honey as were required for the heather harvest extracted. These empty combs were then placed in the racks; as a result heather honey only was stored by the bees in those sections. Before filling the racks with the empty combs, the hive should be contracted to eight frames. There is little fear so late in the season of the queen 'going up' in the sections. Do not super at the back of the hive, but 'tier up.' 2. *Queen Excluder.*—No doubt the excluder-zinc was the cause of the bees not 'going up.' 3. *Superseding Queens.*—With your present experience you ought to be able to find and catch the queen. It is a very simple operation. It is of little use uniting with a cast, as perhaps the young queen would be killed. 4. *Scenting Bees.*—Sprinkle the bees with a small bunch of feathers, do not on any account 'drench' them. 5. *Candy Making.*—See *The British Bee-keepers' Guide-book* for recipes for candy-making. 6. *Moving Bees.*—Move the bees after a spell of bad weather, and as soon as possible. The skeps can be transferred to bar-frame hives. 7. *Entrances.*—Entrances should be kept wide open even in your latitude.

C. WADE.—We have received the bee forwarded by you by post. But it arrived so smashed and flattened that being without shape or form it was impossible to say with any precision whether it was a queen or a worker bee. It was equally impossible to pass any opinion as to its race. We are, however, inclined to the opinion that the bee was not the queen, but a worker, and that it was a black bee.

ARTHUR S. HUGHES.—*Hoge's Horehound Honey.*—We are not unfamiliar with Mr. W. M. Hoge's pamphlet on the virtues of horehound and 'prepared' table honey. As a pamphlet it is interesting, and we should be pleased if a somewhat similar one were distributed by the Honey Company through the length and breadth of the kingdom showing the excellences of British honey. The first we heard of Mr. Hoge was at the Royal Agricultural Show held at Kilburn in 1879. As the agent of Messrs. Thurber, of America, he exhibited about two tons of honey in sections; and the clean, compact, and perfect appearance of the honey furnished very valuable lessons in marketing honey to the British bee-keeper. The 'prepared' honey of Mr. Hoge, of later years, would not, however, stand the test of the analyst. Several samples of Hoge's honey were forwarded to Mr. Otto Hehner for analysis, and he pronounced them, with great 'certainty,' to be adulterated. He said:—'They are products of the action of sulphuric acid upon starch, and consist in part of corn syrup, or of a mixture of the same with more or less of honey.' Mr. Hoge called himself 'purveyor to Her Majesty the Queen,' but on inquiry the title could not be sustained. Hoge's 'prepared' honey was not allowed to be exhibited in proximity to the department arranged by the Council of the International Health Exhibition to the B. B. K. A. at South Kensington in 1884. We believe that Mr. Hoge got up a Honey Company, but we have not heard much of it for some time.

R. L. RICHARDSON.—*Crate for Lee's Sections.*—1. Lee's sections as at present adapted do not fit ordinary crates, but we understand that Mr. Lee has an arrangement in prospect by which this desideratum will be managed. 2. *Water for bees.*—We do not consider the plan of giving the bees water inside the hive with a bottle desirable. Consult the 'Useful Hints' in this issue, under the heading 'Water,' p 85, for a better manner of giving bees water.

A. L. C.—You state in your communication that a recent letter signed 'W. B. Webster' is 'nothing more or less than a series of fallacies and misapprehensions,' but that 'you have neither time nor inclination to go into the matter in detail.' It becomes us, therefore, not to give ear to an unproven or unsupported assertion, or to come to any hasty conclusion respecting the trustworthiness of so old and reliable a correspondent as Mr. Webster has always proved himself to be.

A. F. PARISH.—We are obliged to you for the copy of the *English Mechanic*: we dealt with the matter in our last number. 2. The foundation being of last year's manufacture will not be a drawback to its being worked by the bees. If found to be dry let it be exposed to a gentle heat, or it may be immersed in water slightly warm.

ERNEST WOOD.—*Bee Farming and Appliance Manufacturing.*—This is a question which is now engaging the attention of apiculturists (see 'Simmins' Bee Company' in issue of February 9th, 1888). Like all

other businesses some have floated, others have sunk. To an 'outsider,' as holding no position in the 'bee world,' the manufacture of appliances would most likely prove a failure.

J. S.—*North Devon.*—We should not rely on such drones for fertilisation. We should not breed drones from the queen referred to. The drones sent appear to be hybrids.

Cotswold.—*Moving Bees.*—Yes, now at once; if done on a cold day when no bees are flying.

R. Chapman.—*Bees in Skeps Starving.*—You must not attempt uniting till a warm day in April. If the skeps have feed-holes strew moist *cane* sugar over hole, say a pound, cover up nice and warm. If there is no hole put a quantity under skep on floor-board.

Marcus J. Astle.—*Preserving Frozen Queen.*—The queen could be kept alive on one frame of comb with honey, and, say, a quarter to half-pint of bees if you had a single frame observatory hive and kept same at a comfortable temperature of 45°. Or fewer bees in a small box, ventilated, but kept warm. This is presuming you can get at your bees. As a last resource put her in a cage and insert same in feed-hole, sometimes bees will feed a queen so caged even when not queenless. Kindly let us know later on what plan you adopted and how you succeed. It has been noticed that queens exposed to great cold sometimes breed nothing but drones afterwards.

W. M.—*Heavy Death Rate.*—Without seeing any of the dead bees referred to we should say it is the old bees dying off and not being removed by their comrades, who have apparently quite enough to do to attend to their brood, judging from your report. Experience similar to yours is not unknown, though not very frequent. We would recommend you to introduce some new blood by means of a queen from a distance, and then raise queens from her eggs, and so re-queen your stocks. You might send us a few bees for examination.

Far North.—1. *Obtaining Comb-honey from a Stock that swarms.*—Place the swarm on the stand, till then occupied by the stock from which it proceeded, put the super from the stock—including any bees that may happen to be in it—on the swarm. Use queen-excluder over frames which should contain *only inch starters* of foundation. When the super is three parts finished, place another between it and the frames. 2. *Raising Queens.*—See 'Practical Work in the Apiary,' now running in this *Journal*, and the *many* references to this subject already given.

Received per post from Mr. G. Stothard, Welwyn, Herts, one dozen top bars 1⅜ inches, these are handy for interchanging with metal end frames; a Gray's covered feeder, of an improved pattern, and a Klimitz queen-catcher and cage, easily made by a novice; a very clever contrivance for capturing a queen, which we hope to illustrate in a future issue.

Mr. Stothard writes: 'I tried a new foundation-holder last year which I found excellent, and, *I think*, is my idea. It consists of a metal clip to slip over a top bar and has two little screws to tighten on the foundation. Three are necessary to each bar; all three can be fixed on in two minutes. When the foundation is built out they can be easily removed, and used over and over again for years. The little screws do not press directly *on foundation*, but on two little strips of wood (⅛ thick, ¼ wide, and 1½ long), which can easily be stuck on foundation by the fingers, one on each side of foundation. I have also schemed a strong steel spring for same purpose; the only fault these have, however, is that they tear away a small piece of comb when they are removed if left long.'

*** *On account of the extent of the Report of the annual meeting of the B. B. K. A. we have been obliged to postpone the appearance of the reports of several Associations.*

Business Directory.

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Edey & Son, St. Neots.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
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Edey & Sons, St. Neots.
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Meadows, W. P., Syston, Leicester.
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FOR 1887.

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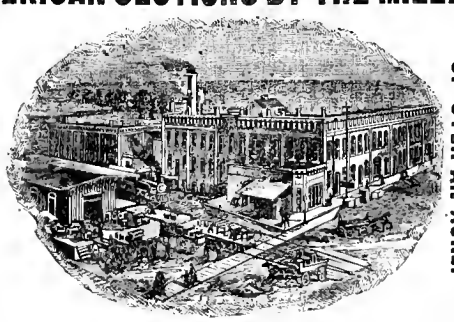

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Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

COTTAGER'S MONTHLY JOURNAL.

We should feel obliged to County, Provincial, and Local Secretaries, if they would kindly furnish our publisher, Mr. J. Huckle, Kings Langley, Herts, with the names and addresses of all cottagers and artisans who take an interest in bee-keeping, so that he may have the opportunity of forwarding each a copy of the new Journal. Numerous names have been forwarded, and we beg to thank those who have taken this trouble.

PRACTICAL WORK IN THE APIARY.

The bee-keeper most likely to succeed will be the one who is always ready to take advantage of every favourable circumstance. During the summer months he finds plenty of employment, and many think there is nothing to do in the winter. This is certainly a more leisure season, but it can be very profitably employed by the bee-keeper in making preparations for the coming season. Bees require little or no attention, but he must not neglect to attend to hives, crates, and any other appliances he may require. If he is of a mechanical turn of mind he will make a great many things himself, and only purchase such articles as frames and sections, which are required in large quantities, and require special machinery to turn them out accurately at cheap rates. Those who depend on purchased articles must bear in mind that hives and appliances are too bulky to be made in quantity by the manufacturers and stored, therefore what he is likely to require he should order without delay, so as to give the dealer sufficient time to complete them. Orders are frequently left until the swarming season, and then there is such a rush that many have to wait some time before their orders can be completed, and often do not get their things until too late in the season when they are no longer wanted.

We do not recommend one manufacturer in preference to another, and our readers are invited to choose from our advertisement columns, where they will find what they require. There are now a large number of manufacturers in England, and our columns are, and always have been, open freely to all to describe and illustrate any new and interesting inventions, and to advertise them, if they think fit to do so; and if they do not take advantage of this they have only themselves to blame if they are not remembered when orders have to be given. We urge upon our readers the advisability of giving their orders at once.

All old hives and appliances which were used last season should be thoroughly examined and put into good working order. The hives should be well scalded, and put out to dry, after which they should be painted over with a solution of salicylic or carbolic acid.

In view of the prevalence of foul brood in many districts this precaution is doubly necessary. We would strongly advise no bee-keeper to purchase any second-hand hives or appliances without having them first properly scalded and disinfected, even if he is certain they come from a district where foul brood is not known.

Our own hives are in several pieces and are easily cleaned, and we prefer them to those on fixed legs, which also have their inner and outer casings fixed for this very reason. In fact it was a very costly experience with foul brood that determined us to have our hive so constructed that it could be easily taken to pieces and scalded. We have a copper holding about fifty gallons, and as the water boils the hive is dipped into it and scrubbed over with a whitewasher's brush. The bristles of this must be bound with copper, or they are likely to come out when the glue holding them becomes melted. Every part of the hive in this way becomes thoroughly cleaned, the wax and propolis coating the wood and forming a kind of varnish, which assists in protecting the wood and answers the purpose of a coating of paint.

We only paint our outer cases and those parts exposed to the weather. The bee-keeper should do all the repairing necessary, and then give all painted work a couple of good coats of oil-paint. The painting ought not to cost much, as good paint already mixed and of any tint required can be purchased in tins at sixpence a pound, and a very little practice will enable any one to turn out a creditable job. Look over frames of combs stored away, and if they show signs of damp, such as becoming mouldy, put them into a warm place and spray them with carbolic acid solution.

Now is also the best time to order what foundation is likely to be wanted as well as sections. We are frequently asked what sort of foundation should be used. For brood-frames we recommend that from four to six square feet, and if the frames are wired it can be even lighter, some using it eight feet to the pound. Those who are going in for extracted honey should wire their frames and they would not run any chance of combs

breaking. For sections the thinnest foundation should be used, twelve feet to the pound. As to ordering sections, the bee-keeper must decide upon the size of these according to his market, but those $4\frac{1}{4} \times 4\frac{1}{4}$ are just now mostly in favour. For every hive it is intended to use for comb honey we should lay in a stock of 80 to 100 sections and three section-racks. The racks should be made to hold from twenty-one to twenty-seven sections and should be provided with dividers. The dividers used last season should be scalded and then hammered flat, so as to fit properly in their places. If he is going to work for extracted honey he must see that he has plenty of spare body-boxes so as to be able to raise his hives to three or even four storeys. A proportionate number of frames will also be required. Make-shift hives are always useful in an apiary for hiving unexpected swarms and many other purposes, and can be made by almost any bee-keeper or purchased for a few shillings.

We cannot insist too strongly on making all these preparations now, so as to be ready when the honey season comes round again. The planting of trees and shrubs should also engage the attention of the bee-keeper now. The willow is one of our earliest pollen-bearing plants, grows freely anywhere, and is easily propagated by cuttings. Larger trees transplanted would yield a supply of pollen this season even. Plant also raspberry-suckers, as well as currant and gooseberry-bushes. Some of the finest flavoured honey we have tasted was obtained from raspberries, and these continue in bloom for a considerable time. Almost all trees and shrubs useful for bee pasturage may be transplanted now, but the transplanting should only be done on days when the weather is fine and the ground in a fit condition.

THE 'WILEY LIE' IN ENGLAND.

Under the above heading in the *American Bee Journal* for January 25, the Editor gives a *portion* of an article which appeared on page 568 of *British Bee Journal* for December 28. We are sorry the whole was not reproduced, but pending an inquiry into the truth of the information supplied, we reprint Mr. Newman's reproof as it appears in the *American Bee Journal*. He says:—

'As usual in such cases, a clergyman is brought into it, so as to give some appearance of truth to the story—for he "visited many of the adulterating bee-farms," says the article. It is a base slander—a *nefarious lie*; neither the clergyman in question, nor "any other man," ever visited any such "adulderating bee-farms!" They do not exist!! It is nothing more nor less than a *scandalous falsehood*—the production of a sensational reporter's brain, written for *spice*, but lacking even the flimsiest "thread" of truth! Its only possible excuse is the infamous "scientific pleasantry" written "for the *fun* of the thing," by Professor Wiley—who is so unprincipled as to let it "fly" on electric wires to "the uttermost parts of the earth," without a word of regret, or denial! When cornered by the *American Bee Journal* he admitted that he wrote it as a scientific pleasantry, never dreaming that any one would imagine it to be a sober fact. Now the *British Bee Journal* republishes it under the heading of "Facts." It is astonishing, to say the least! We have repeatedly offered large sums of money to persons (one of them a clergyman, too) who had repeated this story as a *fact*, to take us to the place where these "artificial combs" are made, or where the "adulterating bee-farms" may be found, but no one can take us to them! No such places can be found! Mr. A. I. Root, editor of *Gleanings in Bee-Culture*, has for two years had a standing offer of $1500 to any one who will point out such places to him—yet there are none who can do it. They do not exist! Now when honey is scarce and prices high, it is just the time for putting this "artificial comb honey" on the market at good prices, for our British contemporary says that it is "so much like the genuine article that only experts can detect the difference." But what are *the facts?* Not even a single pound of the "artificial honey" can be produced! Not even a single "adulterating bee-farm" can be shown!! Send your "clergyman" over here, Mr. Scribbler, to point out such farms. It will pay him to do so!'

ASSOCIATIONS.

SOMERSET BEE-KEEPERS' ASSOCIATION.

The annual meeting was held on the 26th January at the committee-room of the S.P.C.K., Union Street, Bath, only one member, besides the Hon. Secretary (Rev. C. G. Anderson), putting in an appearance. No business was transacted. The position of the Association is as follows:—Members of the Association, 39; Taunton Branch, 28; Bedminster Branch, 10; total, 77. Receipts of the Association, 24*l.* 18*s.* 6*d.*; expenditure, 36*l.* 2*s.* 11*d.*; balance against the Association, 11*l.* 4*s.* 5*d.* Taunton Branch receipts, 9*l.* 10*s.* 6*d.*; expenditure, 9*l.* 9*s.* 6*d.*; Bedminster Branch receipts, 1*l.* 12*s.* 6*d.*; expenditure, 1*l.* 6*s.* 3*d.* The work of the Association has been crippled both from want of funds and energy among the members. Shows were held at Bath, Bedminster, Taunton, Dunster, North Betherton, Stoke Courcy, Nunney, &c. The Rev. Charles G. Anderson, having resigned the Hon. Secretary and Treasurerships, will no longer be responsible for the Association in any way. No business being transacted at the meeting, both offices are vacant; and no plan for carrying on the Association was proposed, though a letter was read from Mr. Hamilton Palairet, offering to assist in paying off the debt due to the treasurer.

LANCASHIRE AND CHESHIRE BEE-KEEPERS' ASSOCIATION.

The Lancashire and Cheshire Bee-keepers' Association held their annual meeting at the Bear's Paw, Lord Street, Liverpool, at 4 p.m., on Wednesday, the 8th February, 1888. Amongst those present were Revs. J. F. Buckler, Sheffield, Hardinge, and Thos. Slevan; Colonel Herne, Mrs. Milner, and Miss Rowe; Messrs. W. B. Carr, Geo. Roberts, Litherley, Williams, Scotson, Sadler, Procter, Bally, Bather, Caldwell, Wade, Lyon, Deane, Milner, &c. The Report and accounts were taken as read.

The Chairman (the Rev. F. Buckler) informed the meeting of a letter he had received from Lord Lathom, the President, regretting his inability to be present, as he was called to London for the opening of Parliament.

A vote of thanks to the officers of the Association for the year 1887 having been proposed, seconded, and carried unanimously, the re-election of officers for 1888 was proceeded with. To the list of patrons the Duke of Westminster had kindly consented to his name being added. The President, Lord Lathom, was unanimously re-elected amidst expressions of general thanks for his kind letter. The other officers of the Association were mostly re-elected, additions being made to fill vacancies, subject to the parties appointed consenting to act.

Rule 6 of the Association was altered so as to make subscriptions become due the day of the annual meeting and after the balance-sheet of the previous year had been published, and the Secretary was asked to write to those members who had not paid prior to the expert making his visit that the expert would be prepared to receive their subscriptions.

Tea was provided for the lady members, and there was a short discussion on the relative qualities of three samples of honey brought before the meeting by the

Hon. Secretary, when the meeting was brought to a close. Several of the members dined together and discussed the work of the Association for the year, all agreeing that every effort should be put to make the bee and honey department of the Royal Manchester, Liverpool, and North Lancashire Agricultural Society, to be held at Lancaster this year, a great success by offering a very full and valuable list of prizes.

It augurs well for the Association that already several new members have joined since the commencement of 1888.

HEREFORDSHIRE BEE-KEEPERS' ASSOCIATION.

The annual general meeting of this Association was held on Thursday, February 2, in the Woolhope Club-room at the Free Library, under the presidency of Mr. James Rankin, M.P., there being also present—the Rev. James Oakley, Dr. T. A. Chapman, the Misses Marillier, Mr. W. Tomkins (Burghill), Mr. George (Ableydore), Mr. H. Lovesay (Holmer), Mr. W. Smith (Thinghill), Mr. M. Meadham (Burghill), Mr. J. R. Hole (Tarrington), Rev. F. S. Stooke-Vaughan (hon. treasurer), Mr. Alfred Watkins (hon. secretary), &c.

From the annual balance-sheet, which was read by the Secretary, it appeared that during the past year the expenditure (including 15*l.* 7*s.* 6*d.* offered in prizes) had been 45*l.* 19*s.* 9*d.*, and there was a balance in hand amounting to 1*l.* 19*s.* 7*d.* Mr. Watkins added that although the amount of subscriptions had fallen off 8*l.* during the year, their expenditure had been less, and the Association was in a no worse position than last year.

The Secretary remarked that at a committee meeting, held on January 8th, it was proposed that the county be divided into districts corresponding with the petty sessional districts, each district to be in charge of a local secretary. On the motion of Mr. Watkins, the recommendations of the committee were confirmed and embodied in the following minutes:—

1. The county is divided into districts corresponding with the petty sessional divisions, each district to be in charge of a local secretary, who shall, after the first holder of the office, be elected by the members of the district.

2. Each local secretary to have charge of the work of the Association in his district, and to be empowered to receive and give receipts for subscriptions; such subscriptions to be remitted to the Treasurer at the end of each quarter, any expenses incurred for postage, &c., being deducted from the amount remitted.

3. Each local secretary to call an annual meeting of all members in his district during the month of January (before the 20th) for the purpose of electing the local secretary for the ensuing year, discussing the work of the year, and any other matter of interest. He may also call such additional meeting as he may think fit.

The election of officers was then proceeded with. In reference to the hon. secretaryship, Mr. Watkins said he had come to the conclusion to resign, but would be prepared to act as local secretary for the Hereford district.

The Chairman, in appreciative terms, proposed that the best thanks of the Association be given to Mr. Watkins for his most useful services as general hon. secretary in the past, and for his offer of continued service as secretary of the Hereford district for the future.

The Rev. F. S. Stooke-Vaughan seconded, and it was unanimously passed.

Mr. Watkins replied, stating that it had been to him a labour of love, and he hoped still to be able to do some good work for the same good cause.

The Chairman then proposed that the Rev. James Oakley, Hereford, be elected general hon. secretary, remarking that that gentleman was fond of the work, and had consented to take up the post. Dr. Chapman seconded the proposal, and it was carried unanimously.

Sir Joseph Bailey, the member for the city, was elected president for the ensuing year. Local secretaries for the various districts were appointed as follows:—Abbeydore, Captain Freke Lewis; Bredwardine, Miss Kearsey Thomas, Winforton; Bromyard, Mr. E. L. Cave; Harewood End, Rev. G. Herbert, Llangarren; Hereford, Mr. Alfred Watkins; Kington, Mr. J. W. Lloyd; Ledbury, Mr. T. Charles; Leominster, Mr. A. Bannister, Docklow; Ross, Mr. A. P. Small; Wigmore, Mrs. Cartwright, Leintwardine; Weobley, Mr. John Griffiths. The committee was also elected. The Rev. F. S. Stooke-Vaughan was re-appointed treasurer. The following were appointed experts:—Mr. J. R. Hole (Tarrington), Mr. M. Meadham (Huntington), and Mr. Thomas Pritchard (Bucknell); and as representatives to the British Bee-keepers' Association, the Rev. James Oakley and Mr. A. Watkins were re-elected.

Mr. Watkins then read the annual Report, which recapitulated the work done by the Association during the year, including private demonstrations, arrangements, and lectures, the bee tent, and the Hereford Honey Fair. Referring to the position of the Association, the Report stated: "About fifty names have been taken off the list of members during the year, but a number of these had ceased paying their subscriptions for several seasons. On the other hand, seventeen new members have joined." It will be noticed that the income by subscriptions is 8*l.* less than last season, but that liabilities remain at about the same amount. The report was adopted, and a vote of thanks was heartily accorded to Mr. Rankin for presiding.

NORTHAMPTONSHIRE BEE-KEEPERS' ASSOCIATION.

The annual meeting of members of this Association was held on Saturday afternoon, January 28th, at All Saints' Schools, Northampton. Mr. A. T. Adams (Crick) presided, and there were also present—the Rev. J. Phillips (Weston Favel), Mr. Francis (Northampton, treasurer), Mr. Collins (Berry Wood), Mr. Adams and Mr. Kimbell (Spratton), Mr. R. Hefford and Mr. O. C. Hollis (Boughton), Mr. W. L. Bird (Horton Hall), and Mr. F. D. Douglas (Wootton).

Mr. Francis said the first business of the meeting was to consider whether the Society should be continued or dissolved. It would, perhaps, be advisable before they took the matter into their consideration to have a statement of the receipts and expenditure for the past year, and of the financial position of the Association submitted to them.

From the statement it appeared that, excluding the bee-tent, which was the property of the Association, the Society was upwards of 6*l.* in debt.

In answer to a question, Mr. Francis said the members of the Association numbered about seventy. Four or five years ago, when he became treasurer, the Society was encumbered with a debt of between 40*l.* and 50*l.* After some conversation he added that the Society could not work the county properly with its present income. If the bee-tent, with an expert, were sent to the different agricultural shows, a large outlay would be entailed, and this the funds of the Society would not permit.

Eventually Mr. Collins proposed, Mr. Bird seconded and it was carried without one dissentient, that the Association be not dissolved.

It was decided to ask Lady Knightley to kindly become President of the Society for the ensuing year, in place of the Hon. C. R. Spencer, the retiring president. The following gentlemen were then elected as the Committee:—The Rev. J. Phillips, and Messrs. W. E. Stimpson, R. Hefford, W. Adams, J. Rooke, W. L. Bird, and E. Adams. Mr. Hefford, at the wish of the meeting, undertook the secretaryship, and Mr. Francis, the treasurership.

The thanks of the Society were given to the Hon. C. R. Spencer, to the Committee, and to the Treasurer, for their services during the past year, and with a similar compliment to Mr. Adams, for presiding, the meeting came to a close.

ESSEX BEE-KEEPERS' ASSOCIATION.

The annual meeting of the Association was held at Chelmsford, at 6.30 p.m. on Friday, January 26th. Mr. Reg. W. Christy presided; and there were also present Messrs. Ed. Durrant, W. E. Bovill, C. R. Finch, W. R. Gibbens, F. W. Brenes (Brentwood), F. H. Meggy, honorary secretary, and W. Debnam, expert and assistant secretary.

The Report stated that county shows had been held successfully on June 7th, in connexion with the Essex Agricultural Society, and November 16th in connexion with the Chelmsford and Essex Horticultural Society. At the first-named there was the best exhibition of hives and appliances which has been seen in the county, and at the latter the largest and best display of honey. At one or other the B.B.K.A. silver and bronze medals and certificates were awarded, and for the first time in Essex candidates were examined for the B.B.K.A. third-class certificate for proficiency in bee-keeping. Mr. Debnam received the silver medal for comb-honey and the bronze medal for run-honey, Mr. Runcieman the certificate for run-honey, and Mr. Cheek the certificate for proficiency.

The offer of the Association to give lectures in winter, or send the bee-tent in summer, wherever the cost incurred is guaranteed, was taken advantage of at West Hanningfield for a lecture, and at Rayleigh, on the occasion of the rural fête, for the bee-tent demonstrations and lectures. The bee-tent is found to be a welcome addition wherever it is engaged; and the attractive lecture, illustrated by lantern and slides, prepared by Mr. Ed. Durrant, is appreciated wherever heard.

The Committee attach so much importance to lectures in the winter season as a means of spreading the knowledge of economic bee-keeping, that they have recently decided to pay half the cost of at least one lecture in each year, to be delivered at some centre where they are not well represented. If the funds allowed they would gladly apply 10*l.* a-year in a similar way, which would enable them to hold many more village lectures.

The division of the county into districts has not, in many cases, borne great results; but the thanks of the Association are, nevertheless, due to all who have acted as district secretaries and local advisers, some for help given during the past year, and others for assistance hoped for in the future. A very slight effort on the part of each District Secretary, planted as they are all over the county, should bring such an addition to the funds as would enable the Committee at least to carry out the scheme for lectures advocated above. Thanks are tendered to all others who have helped forward the work of the Association during the year, and among them to Mr. Debnam, who has waived all claim for recompense for the many hours he has given to the work of assistant secretary.

In reply to a question put by Mr. Durrant, the Secretary pointed out that centres for the sale of honey had been formed in the ordinary course of trade. Honey was sold at a dozen places in Chelmsford only, and it was staged by nearly every grocer. If some sold inferior, foreign, or manufactured stuff, the public were quickly learning to demand what was good, well-flavoured English honey. Mr. Durrant admitted if people did not sell it was generally because they wanted the high prices of times now passed. The prices offered by the honey companies were so low that only those could make a profit who had learned the lessons of the last few years and could make their bees produce double the quantity of honey. Of course they should sell near home if they could. Personally, he could sell almost any quantity.

Mr. Brenes, who took second prize for the best cottagers' apiary last year, corroborated, and stated, after the meeting, that he had sold nearly a hundredweight of honey near home without taking much trouble.

The following are the elected Committee:—Messrs. W. E. Bovill, Reg. W. Christy, H. S. Coleman, Ed. Durrant, C. R. Finch, W. R. Gibbens.

Among the notices issued by the Secretary with the annual Report is an intimation that the Essex Agricultural Society will hold their show this year at Ilford, June 28th and 29th, when it is intended to offer prizes similar to those offered in the past year. There will be a class for the best collection of last season's honey.

The terms in which the Secretary announces the cottagers' apiary competition, for which Mr. Ed. Durrant offered a prize, are "for the best kept cottager's apiary giving largest returns, in comparison with the number of hives. The expert to judge on his rounds. Competitors to be allowed the right of protesting by letter to the Committee."

NOTTS BEE-KEEPERS' ASSOCIATION.

The annual general meeting of the Nottinghamshire Bee-keepers' Association was held on Saturday at the People's Hall, Heathcote Street, Nottingham. Mr. T. J. Gosling was elected to preside, and amongst those present were—Mrs. Wootton, Messrs. P. Scattergood, jun., R. Turner, S. Godfrey, D. Burnham, H. J. Raven, S. Marriott, and F. H. K. Fisher.

Mr. Fisher (hon. secretary) presented the annual report for the year 1887, which stated that they had every reason to be satisfied with the results of the year. The committee had met six times, and had done all they could towards promoting bee-keeping and assisting bee-keepers. Last year's expenses had been met, although the membership had fallen off. With an increase of members there was every prospect of the Association paying off its bad debts. The great difficulty with members seemed to be the sale of their honey, and to assist them the committee arranged to hold a honey fair on the 16th and 17th December last at Nottingham. Messrs. Morris and Place kindly placed their mart at their disposal, and the amount of honey staged was a little over a ton, besides a small quantity of wax. The sales were, however, slow, only six or seven hundredweight being sold. At this fair the medals of the British Bee-keepers' Association and their certificate were offered for competition. There were numerous competitors, including most of the leading bee-keepers in the county. The silver medal was won by Mr. W. Silver, of Retford; the bronze medal by the Rev. R. A. McKee, of Farnsfield; and the certificate by Mr. G. E. Caporn, of Newton. The honey fair was a loss of 8*l.* to the Association. The committee would be glad to arrange for lectures in different parts of the county if desired. Mr. C. E. Walton, of North Muskham, had resigned the office of expert in consequence of press of business. The balance-sheet for the year 1887 showed that the income had been 23*l.* 11*s.* 2½*d.*, and the expenditure 24*l.* 1*s.* 6*d.*

Votes of thanks were then accorded to the retiring office bearers.

The office-bearers for the ensuing year were then elected.

The annual drawing for bee-keeping appliances, which had been presented by various manufacturers, was next proceeded with, and a vote of thanks to the chairman brought the meeting to a close.

IRISH BEE-KEEPERS' ASSOCIATION.

The Committee met on the 7th inst. Present—Mr. Millner (in the chair), Rev. P. Kavanagh, Mr. Sproule, Mr. Gillies, Mr. Read, and the hon secretary.

The Annual General Meeting of members was fixed

for Thursday, 5th April, one of the days of the Royal Dublin Society's Spring Show. Mr. Sproule brought up the report of the Hive Sub-Committee, which was adopted. This report recommended the addition of further details to the description of the Association's Standard hive, which appeared in the *Bee Journal* for October 20th, 1887. The full description, with the addition of these details, is as follows:—The length of top bar to be 16 in. out to out; width, $\frac{7}{8}$ in.; thickness, $\frac{3}{8}$ in.; sides, $\frac{1}{4} \times \frac{7}{8}$ in.; bottom, $\frac{1}{8} \times \frac{3}{8}$ in.; outside measurement of frame, $8\frac{1}{2} \times 14$ in. The top bar of the frame to be what is known as open-ended, with screw-distance-keepers 1 in. in length, and $\frac{5}{16}$ in. across the eye, outside measurements, the eye screws to be inserted immediately over side bars. The runners to be of hard wood, as narrow as possible, and in every way calculated to reduce propolisation to a minimum, for which purpose also the top bars should be bevelled almost to a chisel edge. The hive to be 22 in. long, $14\frac{1}{2}$ in. wide, and, $9\frac{1}{8}$ in deep from the top of frame to floor-board inside. The walls, if single, to be of $\frac{3}{4}$ in. wood, and $10\frac{1}{2}$ in. deep, with a strip of wood at the top to cover the ends of the frames; the strip to be $\frac{3}{8}$ in. full when finished. With double walls these details may be varied when necessary. The floor to be of 1 in. timber, planed on both sides' nailed to rabbet in the sides, and, if joined, to be tongued and grooved. A super cover to be provided of same dimensions inside as outside of hive, so as to cover the latter without plinths, a strip being tacked inside each end to keep it in position; the cover to be of sufficient depth to hold a doubling-box, with frames exactly similar to the brood-frames. The flight-hole to be nine inches wide.

The following fittings to be supplied with the hive:—Convenient entrance slides, an effective porch, one close-fitting division-board; quilts, consisting of one layer of canvas, two layers of jute carpeting, and two of flannel or their equivalent; each quilt to cover the frames fully with an excess of a quarter of an inch all round. Legs, butting on slip along top of slides, raising the hive bottom nine to twelve inches from the ground; the legs to be screwed on and numbered, to facilitate replacement on unpacking; the screws to be well spread, and not less than three in number for each leg.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

CONSANGUINITY.

[1498.] To the account of an isolated apiary I gave last week, without any of the dire effects one would expect to see developed if there is any deterioration by in-and-in breeding amongst the *insecta*, as promulgated by Mr. Webster (and which I doubt), I will add another striking instance of long continued and still continuing success in another isolated apiary, situated, like the old lady's mentioned by Mr. W., in a valley, and surrounded at an easy distance by woods, and interspersed with arable land adapted to the growth of sanfoin, of which a good breadth is generally grown. Now for sixty years this isolated cottage, with only a small farmyard adjoining, was tenanted by a labourer and his wife. Here they spent their wedding, and here, fifty years later, they celebrated their jubilee or golden wedding, and during that number of years they kept bees, and a good-sized apiary, too. The old lady told me they started with three stocks, and increased up to ten, which number they kept for several years, and, finding them profitable, they decided on keeping twenty stocks spring count, except from any winter loss, and which, she said, amounted to barely one per year on an average. They never had any disease among them—in fact, the old lady was incredulous as to bees being subject to disease. A point in this case on which I lay stress, and can vouch for from my own personal knowledge and memory, was this, that the W—s bees always swarmed very early in the season; and years ago when I was a lad I well remember hearing year after year of the earliest swarms of the season, by two or three weeks, falling to the share of the people in question.

I would add I kept bees then and remember staying at home to watch my bees instead of going to Newbury to the celebration and rejoicings on the conclusion of the war and restoration of peace with Russia in 1856. Now if these bees swarmed the last week in April and early in May, or say a fortnight earlier than any other neighbours' bees, and the nearest neighbour was nearly two miles in a bee-line, it follows that if ever a case of in-and-in breeding year after year by bees in one apiary was known, or could be proved, surely it is this one; yet here, on the testimony of sixty years' experience, we find that their losses were barely five per cent. Here we have queens mating with drones, probably brother and sister (according to our affinity), or with first cousins, without the possibility of meeting with any new blood, even in a long flight—the earliness of the season being an insuperable barrier from the very fact that in other apiaries the drones had not made their appearance.

The old couple have passed away to the home beyond, and their name with them, as they left no offspring; but the bees still continue to thrive, aye, and swarm early, and other apiaries have sprung from them within a mile of the original! The man who lives at the cottage now, a carpenter, called on me this week for instructions how to make a bar-frame hive, and a pattern of a frame. He told me his bees are strong and that the withies (palm) would soon be out in sheltered situations.

In conclusion, I submit these two cases of continued apiarian prosperity during a lengthened period are entirely at variance with the notions enunciated by Mr. W. in his recent article on consanguinity; and when the weather is warmer I shall be pleased to send Mr. W. or any other gentleman a sample of the bees (subject to the owner's approval) so that he or they may see for themselves the results of long-continued consanguinity. As regards 'The Old Lady of the Valley,' mentioned by Mr. W., he must seek some other reason or cause, I think; to solve the question of failure rather than consanguinity extending to only the sixth season in face of the two cases cited above, one continuing through as many decades and the other to nearly as many generations (of mankind, not bees). Probably the secluded apiary in the pine-woods languished and died out by spring dwindling for want of sufficient food to carry them through till the heather came into bloom, as we know the undergrowth in pine-woods—or fir-plantations, as we call them here—is practically *nil* as regards honey-producing plants, and I should be much more inclined to say they died from slow starvation from sheer inability to gather a living for an increasing population in the spring than from in-and-in breeding, and the debility mentioned would be the natural result of a bare subsistence. Instances of this are everywhere apparent in all and every form of life. Creatures not receiving proper nourishment must be debilitated—W. Woodley

COUNTY BEE-KEEPING ASSOCIATIONS.

[1499.] I regret that I was prevented from noticing at the proper time Mr. McClure's further observations, and replying to the inquiries contained in his letter published on the 9th inst. He therein asks, 'In what way do I want the Committee of the B.B.K.A. to move?' To this I would answer that they should institute an inquiry into the condition of each county Association with a view to ascertaining how far they have fulfilled, or are fulfilling the primary objects for which they were formed; and then further consider and advise upon the objects which they should set before them. In this county of Kent the missionary work of spreading the knowledge of improved bee-keeping has been proceeding for ten years, and it is not unreasonable to suppose that its task has been largely accomplished. This being so, the question arises, how can we retain that interest and support which hitherto has been liberally given? Is it to be supposed that county bee-keeping Associations will find it possible to maintain a permanent position, depending only upon their benevolent purposes? Or has the time come to any of them when, benevolence having done its part, they shall begin to transform themselves into societies or clubs with defined practical and commercial aims? In asking this I do not wish it to be assumed that I am assenting to it, but the consideration of it may, at least, be of some use in elucidating the main question of the *continued vitality of the affiliated Associations*. In the remarks, which may be taken as the starting-point of the discussion which has now been running on for several weeks, attention was drawn to the now neglected condition of some of the counties which had made a fair start. What has happened to these may happen to others. In passing, I would observe that it is to be regretted that the counties thus implicated have not found a voice wherewith to deplore their condition or to support the suggestion for an inquiry.

To Mr. McClure's observation that I did not bring the subject under the notice of the meeting of county representatives last month, I would say that had I been able to attend I should have endeavoured to have done so, but not knowing beforehand whether an attack of illness from which I was suffering would allow of my doing so, the opportunity was, for the time, lost. I was even prevented from conferring with my colleague on the matter.

For Mr. McClure's kind invitation to pay him a visit I am much obliged, and would assure him how much I should enjoy an inspection of the field over which his Association holds sway, but for the purpose which we have in view I hardly think it is necessary. Generally speaking, our work appears to proceed upon very similar lines, but the result, so far as attendance at committees is concerned, differs in a marked degree. With a large infusion of new blood this year into the working body of this Association, I trust the close of the year may show a great improvement on the past.—JESSE GARRATT, *Hon. Sec. Kent Bee-keepers' Association, February* 18, 1888.

PARALLEL OR RECTANGULAR FRAMES.—YORKSHIRE ASSOCIATION.

[1500.] The 'parallel or rectangular frames' controversy still continues in the *B. B. Journal*, and I read it with interest. Having a preference for the *former*, I was confirmed in it by seeing your advocacy of the parallel in a late number of the *B. B. J.*, and glad to have the support of your more scientific experience. My first frame-hive was obtained in 1875, a Cheshire of that date with rectangular arrangement. When Mr. Abbott subsequently proposed parallel frames I thought I saw many advantages in them, and had hives made by the village carpenter, combining *them* with Cheshire's *hinged cover* and chain to support it when open, and legs eighteen inches high. It is hinged on the front and opens from the back so that I am shut out from the sight of the bees as they return to the hive, when I operate. I have myself made several hives on that plan and see no reason to alter it, and shall be glad if you can still continue to be a 'parallelist.'

And now I am going to rather find fault with you. Severe strictures on the want of energy of the Yorkshire Bee-keepers' Association and its secretary appeared in the *B. B. J.* at the end of 1886 which eventually resulted in your being appointed co-secretary with Dr. Rickards. I was glad to see this announced and said, Now with two secretaries we shall have more movement and energy, and a vigorous promotion of the district associations at numerous centres in the very large county of York, which you yourself advocated. But excepting the one at Horsforth, where you reside, I have not seen that any other has been set on foot. So I am much disappointed. You may naturally enough say, Why do not you yourself get up a York Association? I might if I was younger, but being obliged to resign my vicarage from age in 1883, to say nothing of very serious illnesses in '85 and '86, and being now in my eighty-first year, I am quite unequal to the task. Even the writing of this letter is a perfect labour. If you reply to it, and can suggest anything, I shall be glad to hear from you, and should you at any time be in York, still more pleased if you would give me a call. Believe me, dear sir, yours truly, JNO. HODGKINSON.

N.B.—I still keep on three stocks.

COPY OF REPLY.

January 31*st*, 1888.

DEAR SIR,—I cannot express to you the delight I experienced in receiving a letter from so venerable a bee-keeper as yourself, and I thank you for the trouble you have taken in writing to me.

I consider your letter quite in the light of a slight (and perhaps salutary) personal *parental* castigation, qualified by sufficient honeyed drops of praise respecting 'parallelism' to make your correction rather agreeable than otherwise.

Parallel Frames.—I can see nothing but the greatest advantages connected with this system, and if you will permit me to publish your letter, I will publish a reply, showing how I explain my apparent inaction since (twelve months ago) being appointed co-Secretary with Mr. Rickards. It may be useful in two ways: as showing how an old bee-keeper prefers the parallel frames, and how a young one explains his mysterious and seemingly inconsistent conduct to others who may feel the same as yourself.

I was a bee-keeper living about six miles from the Hon. Secretary Y.B.K.A., and could hear nothing of the Y.B.K.A., although I wrote, you know how strongly, in the *Journal*. Yet I was not going to personally unearth them by a visit to Dr. Rickards. A friend, however, showed him a *B.B.J.* containing my latest exhortation for information. He thereupon wrote me a letter saying the annual meeting would be held in a few days, and he would propose me as co-Secretary. I did not want this, for my leisure (very little it is) is filled up with physiological inquiries into bee-life—that is my hobby. In spite of my protest I was elected, and I promised to assist in anything Dr. Rickards would let me do. Upon this, my first acquaintance with him, I found him a very courteous, aged gentleman, who would gladly have sung *Nunc dimittis* (so far as regards bee-keeping) with joy. He was tired of the Hon. Secretaryship, and tendered his resignation, which we begged him to withdraw. I believe he is about your own age, and had been personally acquainted with my grandfather, I found.

I think he did not treat me properly, for, being co-Secretary with him, I judged he would ask me to look at the Secretary's books, list of members, and so on, but not so. He did not ask me to *his* house, and I could not ask an old man to wait upon *me* with the books, so I was co-Secretary in nothing but name, and in finding

out for myself what I could do. I could no longer harass one I found so far advanced in years, and I also partly regretted my past vigorous action. I was to wait. I answered very many letters of inquiry for information, acceded to every invitation to lecture during this my first year of office, without the least remuneration (or payment of expenses) from any one.

We issued a circular to every bee-keeper of the Y.B.K.A. advocating the formation of branch Association, and so on; formed one at Horsforth, and a very flourishing one at Skipton (they had a nice show of their own last year, and the Skiptonites are forming two new branches in their district this year). I wrote a reply to Mr. C. Atkinson, Tockwith, near York, begging him to call the York bee-keepers together: to Mr. W. Goodall, Brighouse, and to the others in the same strain. So, if they won't 'help themselves,' how can we expect to get on? We cannot with an 11*l.* annual income send a secretary round Yorkshire. Well, on Saturday last Dr. Rickards finally resigned, and I am left with 'the dog to hold.' I intend to try twelve months, and if I cannot do something *I* will resign. I should have told you that I was determined to resign on Saturday, owing to my peculiar position as 'Secretary yet no secretary,' but Dr. R. opened the meeting by resignation. I was therefore compelled to keep office (at a general annual meeting consisting of five members) or create a panic for a few seconds. You will see by our report how we stand, and I hope you will acquit me of seeming inertness or idleness.

We have been governed by people who did not keep bees, by committee-men who did not attend meetings, and supported by members who never attended any, and through it all my mouth was closed out of respect for estimable old age. I was pledged to action, yet couldn't act for fear of wounding, and I had not sufficient leisure myself to undertake the whole duties.

Will you then permit me to send to the *B. B. J.* your very just and kindly worded complaint, and my explanation? The two letters may stir up a few lethargic souls.

I sincerely trust you may be spared many years yet of calm delighting twilight, in which the hum of home-returning bees will linger in the mind as the sweetest music Dame Nature can supply after the sun of your more active life has set. Such an evening of life as yours (if free from suffering) is a happy dream to such as I—a dream rarely realised.—I am, yours respectfully, R. A. H. Grimshaw, *Hon. Sec. Yorkshire B. K. A.*

THE FORMATION OF DISTRICTS.

[1501] The idea was recently suggested to me by Mr. A. W. Henderson (a prominent bee-keeper in this district) that an excellent way of enlisting the sympathy and efforts of bee-keepers in the forming of branch or district associations, would be to write for your columns an appeal to all bee-keepers (and others interested in bee-keeping) in the county, asking for their individual help in forming desirable offshoots of the county Association in their immediate neighbourhood. The *B.B.J.* for the particular week containing such an appeal should then be bought, and a copy sent to every subscriber to the county Association. The suggestion seems so excellent that I hasten to comply with it, and I will, at an early meeting, ask our committee to authorise this extra outlay, for; taking the worst possible view of the matter, we shall be disseminating modern ideas on bee-keeping affairs, and probably increasing the circulation of (shall I say?) *our B.B.J.* One objection to this plan may turn out an advantage, *e.g.*, it will happen that copies of the *Journal* will be sent to those who are already subscribers to it. In this case I will ask them to give the matter their own attention, and to be kind enough to forward the surplus copy to some other enthusiastic bee-keeper.

My remarks shall be confined to the position of my own county, but, perhaps, they may apply to others; anyway it is only to Yorkshiremen I am now writing.

The Y.B.K.A. was founded in 1882 with 74 members subscribing 12*l.* 10*s.*; 1883 showed 95 members subscribing 17*l.* 13*s.* 6*d.*; 1884, 86 members subscribing 15*l.* 13*s.*; 1885, 74 members subscribing 15*l.* 5*s.*; 1886, 43 members sub-cribing 10*l.* 13*s.* 6*d.*; 1887, 47 members subscribing 10*l.* 14*s.* So that, from these figures, it seems there was a wave of enthusiasm when the Association was formed, which, had it continued at the initial rate, would have led to our being a body having somewhat magnificent proportions. Instead of this, however, we seem to have slowly but surely dwindled to half our numbers and nearly half our funds, until (if this descent into Avernus be continued) we shall soon be

'Giving to an airy nothing
A local habitation and a name.'

Thanks though to the firm, regular support given through these six years by many estimable ladies and gentlemen, amongst whom I am pleased to record the usual grand preponderance of our clergy (the mainstay of British bee-keeping), support, ungrudgingly given, with a sturdiness characteristic of the county; given, too, without any return being made other than the annual report, and such help and counsel as the worthy late Hon. Sec. could give, we still exist.

We want *you*, the reader, to take up the question of forming a district B. K. A. in your own neighbourhood. We wish *you* to give it 'a local habitation and a name,' and by meeting and working together with your brother bee-keepers to prevent your Association becoming 'an airy nothing.' A few postcards sent to the known bee-keepers in your district, or a short advertisement in the local newspaper asking those interested in bee-keeping to meet at a given date, hour, and place in order to discuss the matter, will surely rally round you sufficient to form a 'nucleus.' You will at once appoint a hon. secretary and treasurer, and if your number be few, form the remainder into a committee. Next, by informing the county hon. secretary and enclosing 5*s.* (the annual subscription) you become a branch of the B. B. K. A. You will ask what advantage you derive from subscribing to the county. I reply that you may have for your local show the use of the bee tent, lecture diagrams, driving irons, &c. Your hon. secretary and another member also become members of the County Committee; they are admitted to the annual show of the Association, to the bee tent there, and at all the village flower and cottage garden shows. Your members may also compete for the prizes.

It may be urged that in forming districts we are robbing ourselves of members. This may be so, and we may be practising the song of the dying swan. I trust, however, that the greater spirit and *verve* (a sort of developing energy like that of generating steam) imported into our County Association by your action will, in quite the opposite way, *enable us to grow*. Be this as it may, it is our duty to get you established locally; and if the knowledge of humane and scientific bee-keeping be by this action further spread abroad we may say to the young District Association '*Morituri te salutant!*'

I, for one, believe it is only necessary to bring such an important question as the benefits conferred on the farmer by the bee before our landed gentry and our county families, to enlist and ensure their interest, following which their support to the County Association would guarantee its position and usefulness. If I can obtain their ear I do not hesitate to say to the nobility and gentry of this, the vastest county in England, that it is a disgrace to them, and to every one who can support County Bee Associations, and do not, that a body of voluntary workers should lack help when the owners of farms and pasturage are those who benefit most by the labours of the bee they represent.

Many benefits are *indirectly* conferred, but they are none the less distinct; the farmer little thinks that but for the gentle breeze which undulates his sea-like cornfields, his harvest would be mostly one of straw instead of grain. Let my lord's steward ride amongst his tenants' farms and reflect that a moderately strong hive of bees will present the farmer with something like 280,000,000 clover seeds and 40 lbs. of surplus honey in one season.

These seeds all *weigh* (and heavily too) in the forage, and convey the bulk of nitrogenous flesh-forming matter; to say nothing of providing seed for another year. It is surely late in the day to reiterate the fact that if bees (honey and humble) were exterminated, we should have to import all our clover seed every year at an immense national loss! Must we again say that a bee-keeper is practically making a present of a great part of the annual fruit harvest to his neighbours, for fruit trees, beans, peas, &c., are all carefully attended to by his bees? The village doctor and the chemist, however, cannot look upon our bee as an assistant (excepting as it enables him to prescribe and dispense *mel boracis*), for bronchitis, asthma, dyspepsia, and many other ills, are dissipated by the use of honey.

Our well-to-do people, I am sure, are not apathetic on this point; they simply do not see a *direct* benefit, and consequently do not take a *direct* interest in it.

'It is more from want of thought
Than from any want of feeling!'

Every village in Yorkshire should have a district Association, even if they only mustered the parson, the clerk, and the gravedigger. The kindly word and bit of mutual help would go a great way in rubbing off 'cutting edges'—the one by a bit of scientific advice, and the other by a bit of hive-making. These would not appeal in vain for support to 'the squire and the ladies at the Hall,' I know. Ah! if only the half-crowns rubbing pockets through, and the half-sovereigns trying to hide away in purse corners, were only sentient! Would they not cry with Sterne's starling, 'I can't get out,' or I would come over and help you?

Reader, we must go round with the hat *sometimes*, but then this is not so much a necessity as is the will required by bee-keepers to 'help themselves.' Hon. Secretaries would personally wait upon them, and stir up the dry bones, but who is to pay the piper? We want you to make a little music for yourselves. There are many bee-keepers who would dearly like a district Association, but who wouldn't like any work; besides, they want to see *how much they are going to get back*. Such at present are not in our view; we will leave them to put the question to the churchwarden when *he* goes round with the hat.—R. A. H. Grimshaw, *Hon. Sec. Y.B.K.A., Horsforth, near Leeds.*

BEE-TENTS.

[1502.] The time will soon be round when Associations will be making their arrangements for the bee-tent to be present at agricultural and horticultural shows, and I think it will be well before the season begins to carefully consider how we can make the best use of the prominent positions usually assigned to the tents at such exhibitions. In almost every county the bee-tent is now well known, and every time I have witnessed the manipulations they have been practically the same, consisting of simply driving a skep and trying the almost impossible task of explaining to the public how by this means they can avert killing their bees to get the honey. Provided a cottager learns to successfully drive his skeps the bees are valueless to him in the autumn, unless he adopts the bar-frame hive. The instructions on the management of modern frame-hives are usually very scantily touched upon, the utmost that I have seen done in this respect being to have an untenanted frame-hive and extractor in the tent with which the lecturer endeavours to explain the best system of working.

To my mind much more useful lessons could be given by having a frame-hive in the tent with three frames of foundation and three combs partly filled with honey. I would then suggest that the lecturer should bring into the tent a skep containing no combs, but only a swarm of driven bees. These he would hive in the ordinary manner, and afterwards show how easily frames may be added or removed, and also how to super the hive, how to feed, and how to pack for winter, &c. It may be urged that after once hiving the bees the lecturer could not go through that part of the proceedings a second time without having a fresh lot of bees and new hive, but I think he could easily explain exactly how he had done it and thus convey more instruction than by merely driving a skep. With the exception of hiving the bees the lecturer could go through the other details named as often as required.

In the present day, with foundation so cheap, no one counsels a beginner to transfer his combs and bees from a skep, but rather to purchase a new hive and to place in it his first swarm. If my suggested plan were carried out such a beginner would have performed before him the operation which we advise him to carry out. Many cottagers have asked me how they are to hive their swarms in a modern frame-hive, 'because if we turn the hive upside down the frames will fall out.'

Instead of hiving the bees in the tent it might be better to obtain a full working bar-frame hive from some neighbouring bee-keeper so as to ensure having no difficulty in repeatedly opening a hive containing a swarm just inserted, and for the lecturer to fully explain how to tenant such a hive.

I do not wish to find fault with what has been done in the past, for I am aware of much good having been done by bee-tents, but I think we may well consider now that 'driving' is so well known whether we cannot make the bee-tent more useful and at the same time more attractive than it has proved of late.—Edwd. J. Gibbins, *Neath, Feb. 14th.*

QUEEN-RAISING.

[1503] I was very pleased to see Mr. Edey's letter (1443) in a recent *Journal*, and also the writer of 'Useful Hints' in *Journal* of February 2, where he says, 'We should limit it to eggs only.' Well, I guess Mr. Edey intended it to be only eggs, and not brood or queen cells. A frame of eggs is easy to be got in, say, the months of June or July, by placing a frame of comb in the centre of a strong working colony of either variety which is wanted, and taken out at the end of thirty-six hours. Such a comb would contain a large number of eggs. Placed between two thin boards and a sheet of paper, sent off to the purchaser by the evening's parcel post, there is no harm coming to such eggs up to forty-eight hours or longer in a June or July temperature. I have no doubt that many would avail themselves of this mode of getting new blood, but this is the question which will be asked (and I have already been asked), What will such a comb cost? This is the point. What will Mr. Edey, or some other queen-breeder, supply such a comb for (in June or July) when eggs are plentiful? If such a comb will cost as much as a fertile queen in the early autumn, it would be wiser for the amateur of only a few hives to get a queen, or queens, ready to put into his hives, and so do away with all the trouble of raising them, and maybe losing them when out to meet the drones, because there is a great risk with young queens. I am well aware such a comb supplied to a practical queen-raiser would be a success; he would raise a good number of queens, and so pay cost of original comb and all his trouble bestowed upon them; but not so

with him who only wants two or three just for a trial, or to see what they are like.—A. COTTAGE AMATEUR, *Barton, St. Marychurch, Torquay.*

PAINTING THE INSIDE OF HIVES.

[1504.] This being the time of year when the industrious bee-keeper is busy preparing new hives, &c., for the approaching spring, I wish to give a word of warning to any one who is intending to paint the *inside* of his hives.

I can only give the same advice as was given by *Punch* 'To those about to marry,' 'Don't!' The year before last I painted the floor-boards, inner wall, and dummies of several hives, and covered the bees which I placed in them with waterproof quilts, intending to give the plan a thorough trial (it appearing to follow the instinct of the bees). The frames were placed at the back of the hives, with a dummy back and front, and parallel with the front of hives.

All apparently went on well until one warm day in February after a long spell of cold, when I noticed the bees were not flying nearly so freely from the painted hives as from those which were only painted outside. On examining the former to discover the reason, on looking down into the space between the dummy and front of the hives, I found the floor-boards more or less covered with water, and a great number of dead bees floating in it.

One of these hives (with a sunk floor-board) contained more than a pint of water, so that the bees could not leave the combs without being drowned, the water nearly covering the exit in the front dummy. I was obliged to change the bees into a dry unpainted hive, and cover them with porous quilts.

As the season advanced, and breeding was going on, the bees in the hives painted inside did better, and no difference was perceptible during the summer from those unpainted. I find this season the same excessive dampness in the hives which have the inner walls painted, many bees being lost from getting cast on their backs and unable to right themselves owing to the wet floor-board. I shall therefore remove (as soon as possible) the paint from the inside of the hives, as, instead of the moisture soaking into the wood and gradually evaporating, when the walls are painted it runs down and forms a pool upon the floor-board, so that the bees dare not leave the frame.

I shall take good care not to winter any stocks in hives which have been painted inside in the future.

Wintering.—I find that my bees winter better (the porous quilts remaining dryer) if the lift or second storey is left on the hive, there being then a large air-space above the frames in which the air circulates. Moisture is not so likely to condense on the inside of the roof or cover, and run down and wet the quilts, as is the case if the roof is close down over the frames. The extra weight will compensate for the greater surface exposed to strong winds, which might blow over the hive if in an exposed position.—HAROLD ADCOCK, *Middleton, Northampton.*

Reviews.

THE BEE-KEEPERS' REVIEW.—This is the title of a new bee paper edited by Mr. W. Z. Hutchinson, and is published at Flint, Michigan, U.S.A. The first number is on our table, and is, as its name indicates, a Review of the current literature on bee-keeping. In it the Editor says, 'Errors and fallacious ideas will be faithfully but courteously pointed out, while nothing valuable will be allowed to pass unnoticed.' Instead of copying articles in full, they will be condensed giving the ideas, and these will be gathered from every available source. The task the editor imposes upon himself is great, for few people have an idea of the amount of labour there is in condensing long articles so as to make them readable, while they contain only just the pith of the matter. To give a column of 'Gleanings' in our own *Bee Journal* costs us considerably more time and labour than writing half-a-dozen columns of other matter, so we can sympathise with Mr. Hutchinson in the work he has imposed upon himself. He has long been known as a contributor to the leading American periodicals, being also author of *The Production of Comb Honey*, which we have had occasion to allude to in the *Bee Journal*. It is intended to make each number as much as possible a 'special' one. The one before us treats more especially on the 'Disturbance of Bees in Winter,' and extracts from the writings of different bee-keepers giving their views on this subject. As a practical bee-keeper of many years' standing, the experience of the editor will add to the usefulness of the journal, and we wish the enterprise every success.

THE BEE-KEEPERS' MAGAZINE, which has been published for some time past by Messrs. Aspinwall & Treadwell, is now entirely in the hands of Mr. John Aspinwall. The partnership between the above gentlemen has been dissolved, and Mr. Aspinwall has given up the manufacturing business, and intends to devote the whole of his energies to the editing of the Magazine and make it an independent expositor of bee-keeping progress. The January number is already an improvement on its predecessors. Having spent a most enjoyable time with Mr. Aspinwall last summer, we know his earnest desire is to advance bee-keeping and raise it to a higher level than making it merely a means for obtaining money. Being free from the trammels of a manufacturing business, we have no doubt the improvement in the last number will be maintained.

THE CANADIAN HONEY-PRODUCER.—We have received the first eleven numbers of the above, which is published, as stated, for the advancement of honey-producers exclusively. This journal gives the news of all that goes on in the bee-keeping world in Canada, as well as extracts from the leading British, German, and French papers. Also the American papers are extracted of anything of interest to Canadian bee-keepers. It is edited by our special correspondent, Mr. T. R. Holtermann, whose pleasing articles in the *British Bee Journal* are well known to our readers. *The Canadian Honey-Producer* is published by Messrs. Gould & Co., Brantford, who are manufacturers and dealers in appliances.

Conduite du Rucher, ou Calendrier de l'Apiculteur mobiliste, avec la description de trois types de Ruches et la recette pour l'Hydromel, par Ed. Bertrand, Nyon, Suisse. This book, as its name implies, is a guide to the management of an apiary and a calendar of operations for the moveable frame hivist. It is entirely devoted to practical bee-keeping in moveable comb hives, and is not filled, as is too often the case, with descriptions of obsolete appliances or exploded theories, which take up too much space in many books, increasing the size and cost without adding to their value, and which more often tend to distract than to instruct. Contrary to the usual style, the plan adopted by the author enables the bee-keeper to see at a glance what he has to do at any particular season. For instance, if the bee-keeper wishes to know what to do, say, in June, he has only to turn to that month on page 79, where he will find instructions under different headings, such as 'When to remove Honey,' 'Honey House,' 'Extracting Honey,' 'Comb Honey,' 'Wax Purification,' 'Precautions to be taken after the Harvest,' 'Transporting Hives,' &c. Descriptions of all these operations are very minute, and appliances brought into requisition are also fully described. To know something about the inhabitants of the hive, he must refer to March, and here he will find a long and

interesting chapter. Not only is the natural history of the bee entered into, not too exhaustively so as to weary, but also the method of handling bees at this season is described. M. Bertrand, who stands in the foremost rank amongst Continental bee-keepers, is the President of the *Société Romande d'Apiculture* and editor of the leading bee-paper in the French language devoted to modern bee-keeping, the *Revue Internationale d'Apiculture*. He is not only a practical master of bee-keeping, but he has also the gift of imparting knowledge in a pleasant and attractive style, explicit without being verbose. Having had many years' practice in the management of four apiaries and having tried many styles of hives and different systems, he has been able without bias to compare them and to advocate the best from practical experience. The first part of the book is devoted to practical operations and the second part to illustrations and descriptions of hives and appliances. Engravings of several large apiaries are also given and at the end two folding plates contain working drawings with dimensions of three typical hives, the 'Dadant,' the 'Layens,' and the 'Burki-Jeker,' the hives mostly in use in Switzerland. We are glad to find our friend at one with us on so many important points connected with the management of bees and that the methods differ so slightly. The hives in use differ little from ours, but are somewhat larger, for extracted honey is the object of Continental bee-keepers rather than comb, although some advance has been made in this respect of late, which we are convinced is entirely owing to the teaching of the *Revue Internationale*, and we hope the author may be long spared to see the good results of his teaching. On every page will be found good sound instruction, and a copious index makes reference easy. We have much pleasure in recommending this book to those of our readers who understand the French language, and we are sure that it will be welcomed as a useful addition to the literature of progressive bee-keeping.

Foreign.

FRANCE.

French bee-keepers are informed that among others the following local shows will take place in the course of the present year, viz., Auch and Nimes—this will open on 21st of April and close on the 29th; Laon—this will open on 19th of May and close on the 27th; Châteauroux—this will open on 23rd of May and close on the 3rd June; Autun—this will open on 3rd of June and close on the 10th; Epinal—this will open on 9th of June and close on the 16th; Alencon—this will open on 16th of June and close on the 24th. Applications for exhibiting in these shows must be sent in at least one month before their opening date.

Among the subjects set down for discussion during the sittings of the Society of French agriculturists, which will take place in the course of this month, there will be two affecting apiculture, viz., the utility of floating apiaries and the teaching of bee-keeping in rural and normal schools. Both these subjects will be discussed in the eighth or entomology section. In commenting upon these two subjects the *Apiculteur* of Paris gives it as its opinion that the want or utility of floating apiaries is not felt in France as in some other countries. Our canals, adds our contemporary, are comparatively small, and run, generally speaking, along narrow and swampy valleys. It is very different in such countries as are crossed by large rivers like the Nile and the Danube, running across immense tracts of clayey and sandy soils, producing plenty of honey-yielding plants. They might probably be introduced also with advantage in some parts of Holland and China, some of whose plains are a net of canals.

ITALY.

The *Apicoltore* reports that Signor Francesco Paolo Nervegna, of Ortona-a-Mare, has decided upon introducing bee-keeping into his scholastic establishment, and, according to his present arrangements, whilst this tuition will be limited to theory in winter, it is to take the form of practical instruction at his apiary in the spring and summer. The *Apicoltore* praises Signor Nervegna for taking this important step in the interest of apiculture, and expresses the hope that others will follow his example.

Through the energy and influence of Signori Gabriele Passeri and Vincenzo Dei Michetti, a new Bee-keepers' Association has been started at Osimo. One of its objects that it has in view is the establishing of a model apiary where lectures and practical instruction will be given.

Signor Luigi Sartori, of Milan, has undertaken the sale in Italy of Prof. J. C. Bessler's collection of the photographs of 230 bee-masters of all countries. This work takes the form of a large sheet, forty-two centimetres by thirty-four, and will be sent to any address for frs. 5,50, or, say, 4*s.* 6*d.*

Generally speaking, the cold has hitherto been rather severe throughout the country, and bees have, so far, been prevented from making occasional flights.

CANADA.

Annual Meeting of the Ontario Bee-keepers' Association.

The annual meeting of the above Association was held at Woodstock, Ontario, January 10th and 11th. There were present at the opening session about forty-five, the number increasing considerably the second day.

The President, S. T. Pettit, Belmont, Ont., occupied the chair throughout the meeting. The production of extracted honey was the first topic for consideration, and was opened by a paper by F. Malcolm, Innerkip, Ontario. Almost all were in favour of extracting only from the upper storey, and not from the brood-chamber, as many had done in the past. Also that honey should be well ripened, and the honey capped over by the bees before extracting. All were in favour of this, and objected to advancing the idea that honey extracted when unripe and evaporated by artificial means would be as good as that finished by the bees.

The storifying system was apparently the one in use by all but one, and in a good flow two storeys should be used besides the brood-chamber.

J. B. Hall, Woodstock, Ont., gave a paper, 'The Best Method to Produce Comb Honey,' as follows:—

1st, Bee pasturage in abundance, of not more than two miles radius from apiary. 2nd, That said pasturage should not be over-stocked, but rather that it should not have enough bees on it to gather all the honey-flow. 3rd, That there be in charge of said bees an apiarist adapted by Nature, assisted by study and practice, to manage the same (but the Nature part I consider the most important). 4th, It is essential that a hive with moveable combs having a large top surface be used. 5th, That the bee-keeper be a specialist, or, as the phrase is, have all the eggs in one basket. In that case they can be jealously watched and guarded, and used to the best advantage; not so if said eggs are mixed in many baskets with other things.

If the bees have passed the winter and spring well, and are strong in bees and brood at the commencement of the surplus honey-flow, a good crop of comb-honey can be secured by putting on the hive a shallow super of sections primed with comb or foundation (I say sections, because if not in nice sections it cannot be sold to advantage). Open the entrance of hive to its full size, and when work is well commenced in the super, raise it up, and put an empty super between it and the hive. Continue thus until your judgment or experience tells you they have enough space to contain the surplus honey that will be secured. Other things being right, you will rejoice in a good crop of comb honey.

A long discussion followed as to the use of dummies for contracting the brood-chamber, and if swarms should be hived on starter-foundation, full sheets of foundation, or old combs.

The general verdict appeared to be that swarms should not be hived on dummies and a few combs, unless the bee-keeper was prepared to destroy the colony after the honey season was over. That starters would give nicer comb in the sections, but the combs built in the brood chambers were useless on account of so much drone-comb. With a young and vigorous queen such objectionable comb would be much less.

The President, in his address which followed, pointed out during his term of office (two years) the Association had secured incorporation, an annual grant of 500 dols. The exhibit had been made at the Colonial and Indian Exhibition. The prize lists of our leading exhibitions are under our control, and the laying of the foundation of an Association library. The first work having been contributed by Mr. T. W. Cowan of England. The President spoke of the necessity of measures being taken to keep down and stamp out foul-brood in the provinces, and the advisability of an affiliation scheme with county Associations. In closing, the President desired to have it placed on record that he considered the British honey markets had been practically lost to us at paying prices. The temperature favoured for cellar wintering was from 48° to 55°.

Mr. Allen Pringle, Selby, Ont., gave a paper upon 'Ought everybody to Keep Bees?' Mr. Pringle thought, after leaving out those who kept them for health, pastime, or entomological knowledge, no one would want to keep them unless it paid. Mr. Pringle appeared to take a moderate view of the question, and thought many could keep bees to advantage, yet, at the same time, there were many who had lost and would lose money on them. He thought if the Ontario Bee-keepers' Association could take a lesson from the British Bee-keepers' Association, they at least would not discourage others from keeping bees.

Mr. Jas. Heddon, Dowagiac, Mich., gave a very able paper on overstocking; and Doctor C. C. Miller, Meringo, Ills., on the question of the capability of specialists producing more and better honey than others. The doctor favoured the specialist, and the majority of speakers following took his side. Some, however, strongly dissented.

The committee of statistics reported that the Bureau of Industries was about to issue a schedule, which would enable the province to ascertain the extent of the industry in the province.

R. McKnight gave a paper on 'Our Honey Markets, and how to Cultivate them.' Mr. McKnight stated our best market was our home market, and he knew of no better paying market, and we must seek to cultivate it. The paper was very favourably received by the Association.

Messrs. Thomas Wm. Cowan, England, and Ivar S. Young, Norway, were elected honorary members of the Association.

A constitution and bye-laws were adopted, by means of which county associations can affiliate with the Ontario to advantage. Each member for 1887 will receive the revised copy of the Rev. L. L. Langstroth's work on *The Honey Bee*.

The officers for the ensuing year were duly elected. Owen Sound will be the next place of meeting.—R. F. Holtermann, *Brantford, Canada.*

Selected Query.

[1.]—*In establishing an apiary, which would be the better situation, a low position sheltered from windstorms, but rather damp, or one on high ground free from damp, with no shelter from winds?*

Neither position being desirable, I see little use in discussing the question, but, if compelled to accept either forthwith, I should prefer the dry situation, if not too '*high*,' and should at once set about creating shelter. On the other hand, what is meant by '*rather damp?*' If an undrainable pit or bog, ankle-deep in mud and sludge, I would give it a wide berth; otherwise, the natural shelter supposed, is not to be despised, and thorough drainage might make the position tenable and advantageous. 'High' and 'low' might mean the top of a mountain and the bottom of a valley, the former without water and the latter with too much of it. Aspect, too, would weigh with me considerably.—C. N. Abbott, *Southall.*

Dampness is one of the worst enemies with which bees have to contend, but I should prefer the low situation until the higher one had been provided with shelter for the hives by planting hardy evergreen shrubs of quick growth, such as the Portugal laurel, &c.—George Raynor.

With covers painted annually, and sound hives painted every second season, I would prefer the sheltered and rather damp position.—John H. Howard, *Holme, Peterborough.*

I should prefer the low situation.—John Walton.

Of the two I should recommend that the low, sheltered position be chosen in spite of its being damp.—J. Garratt.

There are objections to both the positions mentioned which should, if possible, be avoided in establishing a new apiary, and thus avoid, rather than contend with the evils of both dampness and exposure. A sheltered position has many and very important advantages over an exposed one, and as by judicious arrangements the bees may be made perfectly secure from dampness, I should give the preference to the low, sheltered position.—S. J. Baldwin.

If I could plant or arrange some shelter, I should prefer a high and dry situation for an apiary, as I think bees do better in such a position, but I consider some shelter from the storms in spring and some shade in summer *most* important for the welfare of bees.—M. L. Gayton, *Much Hadham.*

Neither position is desirable. A low, sheltered situation on *dry* soil is the right place.—Sam. Simmins.

I should choose the sheltered position, other things being equal, as it is so much easier to build up stocks in spring ready for the honey-flow in a sheltered situation than in an exposed one, owing to the great loss of bee-life (both young and old), so many perishing with the cold winds after being allured out by the fitful sunshine.—W. Woodley.

I should prefer a sheltered position with S.E. aspect, even though low, to one on high ground without shelter from winds.—John M. Hooker.

HOW TO COMMENCE BEE-KEEPING.

If a start in bee-keeping you're anxious to make,
The following hints may be useful to take,
That from the pursuit may arise satisfaction
Instead of disgust with your stocks, and distraction;
For bees when mismanaged are sources of danger,
And spare with their sting neither owner nor stranger.

Get a good strong frame-hive in the spring, for this reason,
The paint can get dry, and the wood can well season;
And in view of your harvest you'll have less vexation
If you have standard frames filled with good comb foundation.
The first hive you buy should be from a good maker,
Abbott, Neighbour, Blow, Baldwin, Edey, Howard, or Baker,

Or any good firm whom you see advertise
Will be glad to supply a good hive and advise.
Then with veil, gloves, and smoker, you need have no fear of
The first four pound swarm you have fortune to hear of;
To get this in May will repay extra trouble,
Compared with July it is fully worth double.
And if possible try by all means to contrive it
To have it brought home the same day that they hive it,
Say an hour before dusk: place your hive on the ground.
Prop it open an inch, then a sheet must be found;
Draw this well up the floor-board, place quilts on and feeder,
Throw the bees on the sheet and they follow their leader.
To see them march in is most truly delightful:
If vicious, your smoker will make them less spiteful.
They soon hasten in: close the hive about dark,
Lift the bees to their stand and they're ready for work.
They draw the foundation, and very slight feeding
Will stimulate better for working and breeding.
And now if the weather be clear, warm, and sunny,
Your hive will soon fill with the purest of honey.

If further advice of the best you would seek,
Consult the *Bee Journal* that comes once a-week:
And there you will certainly find the true key
To pleasure and profit from our honey bee.

—Samuel Kirkby, *Beeston, Notts*, 16 *Feb.*

A Reminiscence of the Rev. F. G. Jenyns.—I remember the first time I ever saw Mr. Jenyns acting as judge. The labour was heavy, the day hot. The class was one of 'Amateur Hives made by cottagers,' the time was up for to admit the public. I was shut in with the judges, but there were many eyes peering through the loops in the canvas. Presently a lad in knickerbockers broke through and rushed up to our friend, and, clutching hold of his coat-sleeve, said: 'If you please, sir, you did not half look at my hive, you did not notice my new idea in it: this is the one:' and leading him back pointed out a neatly painted hive that looked nothing out of the ordinary from the others. I see him now being led by that lad of thirteen, who had worked his heart into his hive. Officialism, in the person of the secretary of the show, was for putting him out of the tent, remarking 'the judges could not be interfered with in the execution of their duty.' But no, the lad had got hold of one who had something of the spirit of his Divine Master. He looked well at the hive, allowed the boy to explain his idea, asked him to retire from the tent, fetched back his four colleagues, and persuaded them to award an 'extra.' That lad is now a young man, and is still a bee-keeper, and that judge is in the presence of Him who shall judge righteously.—Amateur Expert.

Echoes from the Hives.

Honey Cott, Weston, Leamington, Feb. 13th, 1888.—Here we are right into the middle of February, and what changeable weather it has been: severe frosts for two or three days, then very mild, which the bees have taken advantage of. Last week they were out trying the snowdrops and fetching water, while the air seemed all alive with them; a few seemed to be on the look-out to plunder one another if there was a possible chance. On the whole, I think they have wintered exceedingly well so far; and as the days are getting longer there will not be much fear to the contrary. Hoping we may all have another good season.—John Walton.

NOTICES TO CORRESPONDENTS & INQUIRERS.

T. Nixon.—1. *Simmins' Non-swarming System.*—Mr. Simmins has given his 'Non-swarming System' in his new book, *A Modern Bee-farm*, fully illustrated. 2. *Sections.*—The $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{3}{4}$ sections without dividers hold one pound. Mr. Simmins uses full sheets of foundation, firmly fixed in centre, and he says that no separators are required.

A Novice in Modern Bee-keeping. — *Removing Vagrant Colony from Chimney.*—This is usually a most unsatisfactory job, especially for a novice, but from your description the combs are easily reached. In the first place, make up your mind to receive a fair allowance of stings; then remove the chimney-pot, and while so doing keep the bees in subjection by smoke. This can be done by burning some brown paper in the drawing-room or bedroom grates, as there must be a communication if the bees come down into these rooms. When the bees have become intimidated remove each comb and brush the bees off into a straw skep. Serve each comb in a like manner, and if they are got out in good condition tie those containing brood into the frames of a bar-frame hive. After take this hive to the ground and turn most of the bees from the straw skep into it with the brood combs. When all the combs have been removed from the chimney, dust some carbolic acid powder around the flue where they were attached and place an empty skep over the flue, propping it up on one side. Early next morning remove the skep, when most of the bees will be found clustered in the inside. They can then be placed with the others in the bar-frame hive. If you cannot smoke the bees from the fireplace a smoker or fumigator must be used from the top, but you would have to remove the chimney-pot first, in doing which the bees will be disturbed, unless it could be done the night before. These directions might be modified if we were in a position to view their position. Advice in all such cases is very speculative.

W. J. Sheppard.—We should prefer to give good, clean foundation.

Thos.—*Cowan's Extractor.*—This extractor can be turned at any rate desirable, so that you were wrongly informed. All honey extractors will throw out or damage the combs if turned too quickly. Wired foundation is much better for extracting purposes, as then combs of the current season can be extracted from, whereas without wiring they are most likely to be damaged.

Horace.—*Old Combs.*—With our present opportunities of procuring foundation, we do not consider it advisable to use combs longer than four or five years. The successive batches of brood, through the bees not removing the exuviæ, reduce the size of the brood-cells, and consequently the bees reared therefrom will be smaller in size.

Edwd. J. Gibbins.—1. *Cottager's Bee Journal.*—The greater portion of the matter that will appear in the new Journal will be taken from the pages of the *British Bee Journal*: but we do not bind ourselves that it shall be so absolutely. 2. *Mouldy Combs.*—We advise you to melt the combs. Damp, mouldy combs if given to the bees would be hurtful, and if kept until the summer, would be of less advantage than whole sheets of foundation, since the mouldy, dried-up pollen would be useless as food, and would be cast out of the hive, and the combs having become tender, brittle, and discoloured, would cause to the bees far more trouble and loss of time than to build new ones from foundation.

J. S. Wood.—*Moving Swarm.*—Very few of the bees from the swarm will return to their original stand if they are removed the same evening. You may thus place them at a distance of 300 yards with safety.

E. S. R.—1. *Making Good Candy.*—Castor sugar will do nicely if *pure cane sugar*. The proportion of sugar depends on the consistency of the honey. Try a small quantity first, adding honey or sugar as may be necessary. 2. *Placing Good Candy in Frames.*—Your plan will do excellently well. 3. *Nadiring a Stock.*—The proposed sheet of queen excluder between the two hives would greatly impede the bees, besides they have a decided opinion *against* storing honey *below* the brood nest. No honey pressed out is equal to extracted, in our opinion. 4. *Placing Skeps on Frame Hives.*—The obtuse cottager *could* lift his skeps, but he *could not* extract much, if any, honey from the frames, because his bees are sufficiently obtuse to generally refuse to store *below* their brood. We should strongly recommend you to try to get supers. We recently saw a skep that had been treated as you suggest. The brood nest had been carried down into the frame-hive, as evidenced by the colour of the comb, but *no* honey.

Thomas Colton.—*Bee-house.*—1. A circular hole, three or four inches in diameter, in the upper part of each gable is desirable for ventilation. 2. The bees are prevented from gaining access to the interior of the house by inside packing of strips of wood around the entrances, which should correspond exactly with those of the hives, and should not be less than eight inches in width—better the whole width of the hive—with perforated zinc slides, fixed on the outer entrances for enlarging or contracting them. 3. There is no necessity for a pivot window if the ventilating holes are covered by slides of perforated zinc, which can be drawn aside to allow of the exit of bees. There is little difficulty about the escape of bees, since manipulations are carried on while the doors are open. 4. *Salicylic Acid in Candy.*—After the candy has been removed from the fire thoroughly stir in one scruple of the solution. 5. *Colony with Dysentery.*—Do not use artificial heat unless the colony is removed from the hive before so doing. Cannot you place them temporarily in a box while the hive is being dried? If so, take the frames out *en bloc* in a warm room. If you cannot remove the bees from the hive provide them with clean, dry warm quilts.

Honey Flow.—*Obtaining Honey.*—You have undoubtedly two advantages like others, and if orchards are so abundant in your district, you ought in favourable weather to get some honey. In this case you should commence stimulative feeding about the middle of March, by uncapping some of the honey-cells from time to time, and afterwards giving liquid food in small quantities very regularly, until the bees can collect more than they require for their own sustenance. Of course the clover will be the main crop on which you will have to depend, although in some districts a considerable quantity of honey is obtained from fruit blossom.

D. M.—We are not of the opinion that candied or granulated honey is injurious to bees.

C. T.—Mr. J. Camaschella, 10 Derby Villas, Forest Hill, will assist you.

C. W.—Inquiries will be made.

We have received from Mr. H. Dobbie, Hethersett, Norwich, one of our first-class experts, a packet of seeds containing twelve popular annuals, twelve choice vegetables, and six of the best bee-flowers, namely, mignonette, cyanus minor, motherwort, limnanthes douglasii, borage, mixed wallflowers, with directions when and how they are to be sown.

*** *A number of Reports of Annual Meetings of County Associations are still waiting insertion.*

Business Directory.

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British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
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Edey & Son, St. Neots.
Howard, J. H., Holme, Peterborough.
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VOL. XV. OF

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FOR 1887.

EDITED BY

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53 MEDALS AND DISTINCTIONS.

TARIFF LIST, 1888.

Letters.	Genuine Bees of Carniola.	Mar. and April.	May.	June.	July and Aug.	Sept. and Oct.
		s. d.	s. d.	s. d.	s. d.	s. d.
A	A well fecundated Queen, with the accompanying Bees	9 0	8 0	7 0	6 0	5 0
B	A New Swarm, with the fecundated Queen. Weight of Bees, net, 800 gr.	...	14 0	13 0	12 0	11 0
C	A Natural Swarm, with the fecundated Queen. Weight of Bees, net, 1 kilo.	..	15 0	14 0	13 0	12 0
D	A whole Original Hive, with Brooding Eggs and Honey. Is provided with a layer of gum on account of the risk during transport	16 6	16 6	...	...	15 6

1. The commands are definitively accepted as soon as the required sum is sent in free of post with the command that has been made.
2. The packing is in such a way performed that the bees will not meet with any accident on their journey.
3. The packing up of the objects A, B, C, and D, is already included in the prices mentioned above.
4. In orders of ten pieces, letters A, B, C, and D, the eleventh piece is given gratis.
5. The commands are kindly requested to be made by some lines only in joining the desired letter.
6. As I neither know the English nor the French language, I am obliged to get the letters translated, which costs money and time, and on which account the bees are often sent away too late.

My stand of bees is in a cold mountainous country, only 1½ mile distant from the Triglau (9,000 feet, or 2,850 metres high). For this I take the liberty of recommending you my bees for every country.

Experience teaches that each plant or culture seed brought from colder climates to warmer ones thrives very well, and thus it is to be believed that the same will be the case with the animals.

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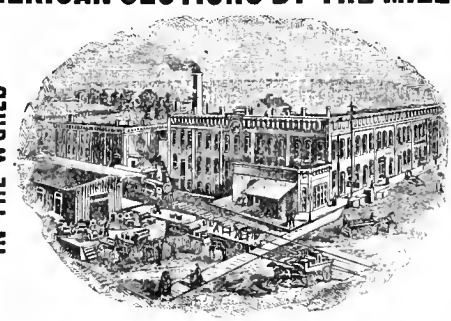

WITH FLOOR-ROOM SPACE OF OVER AN ACRE.

The cut, taken from a photograph, represents our bee-hive factory where we annually turn out about 20,000 hives and 3,000,000 sections, besides enormous quantities of bee-supplies of every description. Dealers before ordering elsewhere should correspond directly with us. We are prepared to quote better prices on sections in quantities than we have ever quoted before.—We are also publishers of *Gleanings in Bee Culture*, with a circulation of 7674 subscribers. A sample copy of our journal and our 40-page price list sent on application to

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THE
BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

COTTAGER'S MONTHLY JOURNAL.

We should feel obliged to County, Provincial, and Local Secretaries, if they would kindly furnish our publisher, Mr. J. Huckle, Kings Langley, Herts, with the names and addresses of all cottagers and artisans who take an interest in bee-keeping, so that he may have the opportunity of forwarding each a copy of the new Journal. The first number is now published.

BRITISH BEE-KEEPERS' ASSOCIATION.

The prize schedule for bee-hives, honey, &c., at the Royal Agricultural Show, to be held at Nottingham in July next, is now ready, and may be obtained upon application to the Secretary, Mr. John Huckle, Kings Langley, Herts.

The Annual Meeting of the Gloucestershire Bee-keepers' Association will be held at the Raikes Memorial Hall, Brunswick Road, Gloucester, on Thursday, March 8th, at 3 p.m. Also a Committee Meeting from 2.15 to 3 previously.

PRACTICAL WORK IN THE APIARY.

Makeshift Hives.—There is hardly anything that is not absolutely necessary, more useful in an apiary, or that conduces to the comfort of the bee-keeper, than the possession of a few makeshift hives. These, as their name implies, are not intended as permanent dwellings for bees, but come into use occasionally. In them frames can be arranged temporarily for the reception of swarms which might come unexpectedly and undesired. Colonies may be placed in them frames and all, while their hives are being cleaned or repaired. They can be used for supporting frames while queen-cells are being cut out, and for a number of other purposes. The possession of a few makeshift hives makes the bee-keeper independent of hive-manufacturers during the height of the swarming season, when there is a difficulty sometimes of getting hives, and frequently avoids the necessity of purchasing more complete ones. Sometimes the bees can be kept in them until the end of the season, and then united to another colony, and they are as good for this purpose during the summer as the more expensive hives.

Anything the right size in the shape of a box that will hold a few standard frames will do for a makeshift hive, and any amateur carpenter can, without the slightest difficulty, make from the simplest available material, such hives during leisure time in winter. Packing-cases, such as are used for tinned meats, can be purchased for a few pence, almost from any grocer, and contain sufficient material to make the hive. It should be made 9 inches deep at least (half an inch deeper would make it none the worse), 14½ inches between the sides on which the frames are to hang, and any length the bee-keeper chooses, allowing 1½ inches for each frame. These are inside measurements. Supposing one to hold ten frames be required, 15 inches must be allowed between the sides. The sides on which the frames rest must be ⅜ of an inch lower than the others to allow the tops of the frames to come level with the sides, and strips of wood nailed on the outside level with the top will form the rabbet, and close in the ends of frames. Should the bee-keeper use frames with a long top-bar, provision must be made for this; but we would recommend him to cut off the ends to within ⅜ of an inch of the rectangle. Any sort of opening may be cut to make an entrance passage for the bees, and it is immaterial on which side it is. By having one at each end and placing the frames parallel to the entrance at a pinch two small lots of bees can be accommodated if a division-board is placed between them. The floor-board can be nailed on, and with the addition of a quilt the hive is ready for any emergency. There is no necessity to plane the wood, as for this purpose it is none the worse for being rough. Those who cannot make, or who have not the time to do so, can purchase such hives for a few shillings ready-made.

Convertible Makeshift.—So far we have described the simplest form of makeshift hive, but in 1879 we adopted a pattern which has much to recommend it, and one that can be made into a permanent hive which will be as good as any.

In 1878 the new Langstroth hive was introduced in America. This was a combination of the ordinary Langstroth and the North Star hives, for which Messrs. Sperry & Chandler obtained a patent in 1877. It is shown in illustration fig. 1, and as will be seen it has a a loose manipulating side M. We were amongst the first to get and use these hives, but we did not find in them all the advantages claimed, because the manipulating side was only moveable to a certain extent. This defect we remedied by making the side slide on the rabbets and made it moveable to any extent, so that we could contract and expand the hive as we liked without using division-boards. As makeshift hives we have found them most useful, and we have ever since used them for this purpose. Our ideas have been since copied, and, as is usually the case, without any acknowledgment on the part of the imitators. The illustration,

fig. 2, explains the construction of our makeshift hive, and which we called 'Convertible makeshift,' because it could also be used as a permanent hive, with very little alteration.

There are three sides, A, B, C, two of which, A and B, are nailed to the floor-board F. The side C is loose, and is kept in position by a screw, which goes through

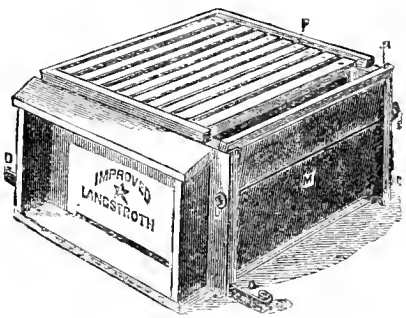

Fig. 1.

the floor-board into the end of side C. A slot in the floor-board at E, and through which the screw passes, permits the side E to be moved. The fourth side D is moveable, slides on the rabbets, and is in the shape of a close-fitting division-board. A ¼-inch iron rod G passes through the sides A and C, and by turning the fly-nut H they can be brought tight against the board D and will hold it in its place. By turning the fly-nut in the opposite direction the sides are loosened and the loose side D can easily be pushed backwards or forwards. There is an entrance in the side B, and if it is desired to put in two lots of bees the board D can also have an entrance made in it, as shown in the figure. A quilt on the top with a board or roof over it completes the arrangement.

We used some of these hives without any entrances being cut out of the sides, but in this case they were

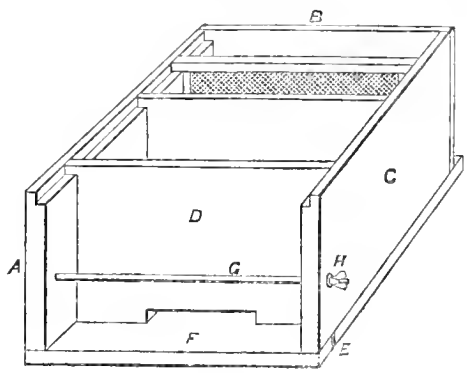

Fig. 2.

sunk in the floor-boards. By using such boards we could place the hives so as to have our frames at right angles to the entrance, a position we much prefer to any other.

It will be seen that as a summer residence this hive is complete in itself, is capable of expansion and contraction to suit all requirements, and can be used as a single or double hive. One of these hives is to be found in the collection we presented to the B.B.K.A. in 1885, and since 1879 we had four of them in our bee-house, where for wintering they were packed with chaff. Although we do not consider makeshift hives indispensable in an apiary, we think they are useful, more especially if they are made according to our pattern, for by having loose floor-boards they can be worked for storifying, or in any other manner the bee-keeper may like, and during the summer months they may be substituted for any other hive. In the autumn the colony can be transferred to another hive for wintering, or it can be united to another colony.

With a very trifling addition at small cost this hive can be converted into a wintering hive. For this purpose we have to prepare a board with three strips of wood one inch thick, arranged as shown in Fig. 3. This board is fastened on to the side A by means of four screw eyes, and a similar one is fixed on side B. We now have on two sides double walls with a cavity between, into which chaff can be poured. Chaff division-boards are put on each side of the brood-nest, and with a chaff-box on the top and roof to cover all, the hive is complete for wintering. Such a hive need not be an expensive one, and can be easily made by an amateur carpenter. As the side D has to fit with some accuracy, and slide freely, the sides A and C should be planed, at any rate inside.

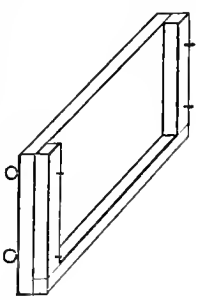

Fig. 3.

USEFUL HINTS.

Weather.—While in the great north-west of North America we are told that those awful visitations called 'blizzards' (*i.e.*, tornadoes of icy particles) have swept over large districts, destroying man and beast, that the whole country was freezing with the thermometer ranging from 50° to 60° *below* zero for several weeks, and then suddenly rose to 50° and 60° *above* zero, 'causing the bees to sport in the balmy air,' here, in old England, a week of unusually mild weather over the whole country was followed by a change to the opposite extreme, and for the last fortnight the earth has been frost-bound and covered in all parts by deep snow, the storms having begun in the north of Scotland and spread southward, until the whole face of the land is covered with an icy garment of snow. From Scotland, Ireland, Wales, Somerset, Cornwall, Jersey, France, Spain, Switzerland, &c., the same accounts reach us, of snow and frost in abundance with cutting, searching north and east winds, such as the oldest inhabitants never remember to have occurred at this season of the year, when we were all looking for balmy airs and gentle zephyrs to usher in the spring. In our southern counties the hazel catkins were beginning to appear, the dead nettle and speedwells were in bloom, and on sheltered banks beneath the hedgerows the spring flowers were bursting into bloom, when horrid Winter, with icy hand, again seizes upon every scrap of vegetation and nips it in the bud. And still, as we write, snow on the hills, snow in the valleys, snow everywhere, and snow still falling! But we shall be told that vegetation was getting too forward, that a check was required, that better now than later (yes, if we don't get it *later* as well) that—

> 'February should fill the dyke,
> And if with the white
> It's the better to like.'

Well, let those like it who can, but we don't think our bees will be among the number. By the cutting, withering blasts, and driving, piercing snow, their numbers will certainly be thinned, and many a colony will fail to greet the sunshine—when it comes—with murmuring joyful hum and gaily quivering wing. For ourselves we shall in future certainly pray, in dear old Virgil's words,—'*Di, talem terris avertite pestem.*—O ye Gods, avert such a scourge from the earth.' Ere long let us hope that the Golden Age will return to all bee-keepers; the Age when—

> 'Ver erat æternum; placidique tepentibus auris
> Mulcebant Zephyri natos sine semine flores.'

Forage.—When the present unseasonable weather departs, and the sun entices forth the bloom on the elms, poplars, willows, peaches, nectarines, early pears, plums, and cherry-trees—all of which we may look for during the present month—then will our bees greatly rejoice in the precious nectar, after their long and cruel imprisonment. But these gifts of nature will merely serve to whet the appetite, and to create a craving for more.

Syrup Feeding.—The demands on stores will increase as spring advances, and syrup will soon be required. Those colonies which are breeding fastest will require it most. Let the first potions be given thick and warm—the consistency that of well-ripened honey—from a bottle-feeder, on the crown of the hive, well covered with woollen material. A feeder which holds about three pints will be found a convenient size, and with three holes turned on should last about a week. Seven pounds of Duncan's pearl sugar to three and a half pints of water, boiled for a few minutes, with a subsequent addition of salicylic acid, vinegar, and salt, according to Mr. Cowan's recipe—see his *Bee-keeper's Guide-Book*, p. 151—is the best food we know, far better, indeed, than the solid, granulated honey, of which—after such a winter as we have passed through—plenty will be found in most hives. In a hive abundantly stored with such honey, bees will starve.

Examining Hives.—We still urge ardent apiarists to abstain from manipulation until the end of the month, or the beginning of April, unless in exceptionally fine weather. Since it is extremely probable that a late spring will follow the long and piercing cold still prevailing, a thorough examination of colonies may well be postponed for a week or two; and with careful attention breeding may be encouraged by judicious feeding, by changing filthy floor-boards, and damp and mouldy quilts, for warm, dry clean ones; above all, by providing that there shall be no stint of food.

Queenless and Weak Colonies.—When bees are in full flight the experienced apiarist will keep a sharp outlook on all colonies, and will decide, with few mistakes, as to the condition of each by the motions and actions of the bees. There are certain unmistakable signs of queenlessness, dysentery, sparseness of population, &c., which it is unnecessary to recapitulate here, since every one who keeps bees ought to know them. A queenless hive may be detected at this season, by the agitation of the bees around the entrance, which is kept up after other colonies have quietly settled down, and gone to rest; and, very often, a dead queen will be carried out, and may be found beneath the alighting-board. Such colonies carry home no pollen, while others are rushing into their hives with heavily laden legs. These queenless bees, as well as other weak stocks, should be nursed for the present, by a little judicious feeding, and extra warm wrapping, until later in the season, before uniting, for which next month will be quite early enough. But there is one exception:—

Hunger Swarms, as they are called, are those colonies which desert their hives—often in this and next month—*en masse*, even when possessed of food in plenty. Although such vagaries generally arise from starvation, sometimes dislike to their surroundings is the motive cause. The deserters will usually settle near their hive, exactly as a swarm, and as such they should be treated, and placed in a new hive upon clean combs and on the same stand previously occupied; and to these weak or queenless colonies may be at once united, and the queen changed, if that is thought desirable, since the desertion is sometimes caused by worn-out or unfertile queens.

Queen Introduction.—As queen-importation will soon begin, a few remarks on this well-worn subject may not be amiss. We have much yet to learn in safely introduciug alien queens. How often do we hear complaints of queens being introduced successfully (?) both directly and otherwise, when lo! on examination a week or two afterwards the successfully introduced one, *non est inventa!* One of the rules most imperatively prescribed by the advocates of direct introduction is—'Do not examine the colony for four days after introducing the queen.' Why? You will be told that nothing is more likely to cause an attack on the queen than examination and disturbance of the bees at so early a period. But the probability is that during the first three or four days after dropping an unprotected queen into a colony of strangers an examination would disclose the queen under encasement. Now encasement in nine cases out of ten means injury to the queen. We have had a queen under encasement for seven whole days, and she escaped with her life at last, but proved utterly worthless from injury received during her imprisonment. Mr. Alley, the most extensive and successful queen-breeder and introducer in the States of America, in his *Twenty-two Years' Experience in Queen-rearing*, gives us these very suggestive remarks:—'Unless properly introduced queens will be rendered worthless before they have been in the hive an hour. Sometimes they will be slightly stung, but not sufficiently injured to cause immediate death, although rendered incapable of laying. When the hive is opened, apparently, the queen is kindly received by the bees and successfully introduced, as the marks made by the sting are not always easily recognised. Occasionally they receive a sting in the leg, rendering it useless, and such injury is easily recognised. Nevertheless the queen will continue to lay, but not to the extent that she would had she received kind treatment from the bees when introduced. Sometimes several weeks elapse before they show any indications of failing or having been stung, and then are superseded, or, as the term is, "missing."' If our memory serves us, it has been dogmatically asserted by more than one correspondent in these columns who professed to lay down a rule for queen introduction, which '*never* failed,' that 'bees, under any circumstances, will never sting a queen.' Mr. Alley, at least, is of a different opinion; and his remarks, quoted above, afford a warning against the danger of plunging an unprotected alien queen into the midst of a strange colony. Hence we ourselves always advise the use of a cage in the hands of the inexperienced.

Selected Query.

[2.]—*Will honey stored in combs from which the honey was removed in the autumn, and the sections with comb kept through the winter, be as good-looking and as saleable when completed as those finished the same season that they are begun?*

Not as a rule.—S. Simmins.

Yes, if the comb remains unsoiled.—C. N. Abbott.

Extracted honey taken from stored combs of not more than a year old and free from pollen will be equal in quality to that extracted from any other comb, *cæteris paribus*; but sections of comb, even if carefully stored, when refilled and capped in the second season, are neither equal in appearance nor quality to those which are quickly worked and completed in one season. Sections of the first quality are always those which have been quickly worked during an unbroken honey-flow.—George Raynor.

No. As all new goods bear their own impress, even so is newly-built, stored and sealed comb honey its own witness. In all our comb-honey productions, none but the entirely new were ever selected for competition, and the awards given us have justified the selection made. Old comb-work, freshly stored and sealed, is more opaque than the newly-wrought; hence, when held to view under a strong light, no judge would select the former for a premier place. Good saleable honey

we have had in many a last year's comb, but from experience I am convinced it is unwise to gather sectional honey in old comb-work. Also the cells of combs for storifying and extracting should be well cut down ere nsed. When so treated we have found the work of storing and sealing more progressive throughout.—JOHN H. HOWARD, *Holme, near Peterborough.*

I frequently have many sections left over at the end of the season, which I extract and place in crates on top of hives for bees to clean up; then I get the propolis cleaned off, and store them away in the crates, and use a few of them in each crate when first putting them on the hives, and can see no appreciable difference in the colour of the honey; the wood does not look quite so nice, but the presence of worked-out combs makes the bees take to them sooner.—JOHN WALTON.

Yes.*—J. GARRATT.

It frequently happens that the combs built in sections after the latter end of the honey-harvest are, as well as the honey in them, darker than those built in the early season, and such combs may retain their colour, and consequently will somewhat depreciate their value when filled the following year. If, however, the section combs are of a light colour, properly treated in the autumn and carefully preserved through the winter, their value to the bee-keeper is almost inestimable, as the bees may be tempted to commence active operations in supers furnished, or partly furnished, with such more readily than if foundation only be in the first place given, and they will be as good-looking and as saleable when completed as those commenced and finished the same season.—S. J. BALDWIN.

If the combs, whether in frames or in sections, are not discoloured, and are put away *perfectly dry and clean*, and kept during the winter in a warm, dry room, carefully protected from dust and insects, I have never found any difference in appearance between them and others *newly-worked* from foundation when both are filled and sealed.—M. L. GAYTON, *Much Hadham.*

Certainly not.—JOHN M. HOOKER.

ASSOCIATIONS.

MIDDLESEX BEE-KEEPERS' ASSOCIATION.

The annual meeting of this Association took place on Friday the 10th ult., at 5.30 p.m., in the Council-room at the offices of the Royal Society for the Prevention of Cruelty to Animals. The Baroness Burdett-Coutts (President) occupied the Chair, and was supported by the Hon. and Rev. Henry Bligh, Mr. Jonas, Mr. Harveyson, Mr. Rose, Dr. Rayner, Mr. Henderson, Mr. Pye English, Mr. Willan, Mr. Mason, Mr. Wm. Gardiner, Mr. W. M. Graham, and other ladies and gentlemen.

The Hon. and Rev. Henry Bligh read the minutes of the last annual meeting, which were confirmed.

The President moved that the report and balance-sheet for the year 1887 be adopted, with a vote of thanks to Mr. Arthur Kenworthy the auditor.

Mr. Rose read the balance-sheet, after which the resolution was carried unanimously.

A vote of thanks to the retiring officers and committee for their services during the past year was moved and seconded, and carried *nem. con.*

Mr. Jonas proposed a vote of thanks to the Royal Society for the Prevention of Cruelty to Animals for kindly granting the Association the use of their Board-room; Mr. Pye English seconded the resolution, which was carried.

The President, who is also President of the Ladies' Committee of the Royal Society for the Prevention of Cruelty to Animals, expressed her thanks on behalf of that Society.

Mr. Harris moved the re-election of the President and Vice-Presidents of the Association. He thought it would be superfluous for him to say anything in advocacy of the resolution. The Baroness's name was a household word, and the other noblemen and gentlemen were men of the highest reputation and influence. Dr. Rayner seconded the motion, which was carried unanimously.

The President returned thanks for her re-election to a position she would be very sorry to lose.

Mr. Jonas moved the re-election of the Treasurer, the Auditor, the Secretary, and the Provincial Secretaries, which, after some discussion, was carried unanimously.

The Hon. and Rev. Henry Bligh proposed the re-election of the Committee, which was seconded, and debated at some length by Messrs. Harris, English, Graham, Jonas, and the President, and ultimately passed unanimously.

The Hon. and Rev. Henry Bligh proposed the election of Mr. Fewtrell as expert, which resolution was seconded by Mr. Mason. Mr. English moved that Mr. Baldwin's name be substituted for Mr. Fewtrell's. This amendment was carried without a division.

The Hon. and Rev. Henry Bligh proposed that Mr. Graham and Dr. Rayner be the County Representatives at the quarterly conferences of the B. B. K. A. during the current year, which motion was seconded and carried unanimously.

The Hon. and Rev. Henry Bligh proposed a cordial vote of thanks to the Baroness for her kindness in presiding, which was seconded and carried by acclamation.

The President expressed her sincere thanks for the kindly way in which she had been received. It had afforded her extreme gratification to be present that day as well as at the meeting of the B. B. K. A., which took place on the previous Wednesday. It might be said that she was a queen with a double sting, or better, perhaps, the queen of two hives (laughter). Her ladyship then referred at length to a Bill for the better adaptation of education to agricultural pursuits, about to be brought into Parliament by Mr. Jesse Collings, M.P., and recommended those present to do their best to aid the passing of that measure. A great deal might be done in the country to further the adoption of bee-keeping as a means of profit to labourers and others if the subject were taken up in schools. While admitting that education of any kind was good, she could not help thinking that some theoretical subjects were taught in country schools which were likely to be of little, if any, use to the scholars, and that it would be highly desirable to replace those lessons by technical education in agricultural and its kindred studies. The President then alluded to the circumstance of a schoolmaster at Faversham having chosen bee-keeping as an extra subject upon which to instruct his pupils; also that the Education Board had made objection thereto, and that she intended to bring the matter under the consideration of Lord Cross. Possibly he might be willing to receive a deputation on the subject, in which case she hoped to receive the co-operation of all present. Her ladyship concluded by heartily wishing prosperity to the Association.

Mr. Graham read a list of prize-winners who had been successful in the annual drawing.

DERBYSHIRE BEE-KEEPERS' ASSOCIATION.

The annual general meeting of this Association was held in the Guild Hall, Derby on Friday, February 10th. Mr. J. L. P. Barber, of Stanton House, Burton, presided, and amongst those present were Messrs. Cooper, Coxen, Turton, Hugh, Pearson, Morley, Smith, Rowland, Wilks, Shipman Handley, Rawson, Bryan, Atkins (secretary), &c. The Chairman moved the adoption of the Report

* I understand the question thus: The honey was *extracted* from combs and sections in the *autumn*, and in the spring given to the bees in an empty state to fill.

and statement of accounts. The following is an extract from the report:—During the year a much greater amount of work has been done than in any previous one, and the Society may be congratulated on the position it has gained as one of the institutions of the county. Notwithstanding this, it will be seen by the balance-sheet that there is a need for further and increased subscriptions and donations to the society, especially to meet the large increase in the experts' charges. The appointment of Mr. W. Coxen as expert for the southern division seems to have given satisfaction, and in conjunction with Mr. Handley, for the northern division, he has made spring and autumn visits which have been attended with good results. The number of subscribing members is now 411, and 19 donors, making 430, against 350 and 23—373 last year. Increase, 57. After paying all expenses, we are able to carry forward a balance of 29*l.* 16*s.* 6*d.*, against 25*l.* 16*s.* 2½*d.* last year, and 7*l.* 8*s.* 4*d.* in 1885. The annual show and fair for 1887 was held as usual by the kind permission of the Committee of the Derbyshire Agricultural Society, on their grounds, on September 14th and 15th, and was again a success, the number of exhibits being fully fifty per cent more than on any previous year. The report was unanimously passed. The officers were then re-elected, and several alterations were made in the rules. The name of Mr. Barber was added to the list of vice-presidents, and those of Messrs. Barber, Rowley, and Turton, to the Committee. Messrs. W. G. Copestake, F. Holbrook, and W. T. Atkins, were re-appointed treasurer, steward, and secretary respectively; and votes of thanks for past services were accorded. Second-class certificates given by the British Bee-keepers' Association were presented to the following: Messrs. Coxen, Shipman, Rawson, and Austin. The annual draw for hives was made, the following being the winners: Mr. G. T. Banks, Church Gresley, Burton-on-Trent, and Mr. W. T. Atkins, Derby. Mr. Benjamin Skirmer was instructed to provide the hives at 10*s.* each. A vote of thanks to the Mayor and Mr. Gadsby for the use of the room was carried, as was one to the Rev. G. Shipton, Brampton, for lecturing on behalf of the Association. A similar vote was passed to the Chairman. This concluded the business.

THE SOMERSET BEE-KEEPERS' ASSOCIATION.

Annual Meeting and Conversazione of the Taunton Branch.

The annual general meeting of the Taunton Branch of the Somerset Bee-keepers' Association was held at the Coffee Hotel, Taunton, on Thursday afternoon, Feb. 16. There was a good attendance. The chair was taken by Mr. C. E. Lance, the president of the branch; and there were also present Mr. F. W. Newton (Barton Grange), the Rev. H. S. Hume (vicar of Wilton), Mr. C. Tite (Wellington), Mr. T. S. Penny, Mr. A. J. Smith (honorary secretary), Mr. C. Lewis, the Rev. W. B. Caparn, Mr. H. Maynard, Mr. W. B. Maynard, Mr. Barter, Mr. Hosegood (Williton), Mr. James Buckland (Pitminster), Mr. W. Tout and Mr. C. Tout (Thornfalcon), Mrs. Newton, Miss E. Maynard, Miss K. Maynard, Miss Rawlins, Mrs. Tite, and Miss Scarlett.

The Chairman said the accounts of the branch were exactly balanced. The Hon. Secretary read the annual report, which was duly adopted, from which it appeared that the committee of the Taunton branch of the Somerset Bee-keepers' Association were able to give an account of increased success and progress during the past year. In February, 1887, Mr. W. B. Maynard was elected hon. secretary in the place of Mr. E. S. Hammond (resigned), and a representative and influential committee having been formed, with C. E. Lance, Esq., as president, arrangements were made with the Parent Society for the management by the branch of its own affairs, subject to the approval of the county hon. secretary, and the payment of an affiliation fee fixed at twenty-five per cent of the 5*s.* subscriptions. A circular was published setting forth the objects of the association, which was sent to all the principal known bee-keepers of the neighbourhood, and a guarantee fund was started, which enabled the committee to offer prizes at the Taunton flower show to the amount of nearly five guineas. In consequence of the efforts thus put forth, the number of members was raised from about twelve to twenty-eight. The exhibition held in connexion with the above-mentioned flower show was a great success. The funds at the disposal of the Committee had not permitted the employment of a visiting expert; they therefore pleaded for augmented support in order that the Association might be made a greater source of benefit to its members than in the past. The committee regretted that Mr. W. B. Maynard had found it necessary to resign the post of hon. secretary, Mr. A. J. Smith kindly consenting to fill the office *pro tem.*

The annual report of the county association was also read, and considerable discussion thereon followed, general regret and surprise being expressed that Somersetshire bee-keepers had allowed the association to reach such a low ebb, notwithstanding the strenuous efforts of their zealous hon. secretary, the Rev. C. G. Anderson. It was felt that an effort should be made to carry on the county organization, and the following resolutions were passed:—

'That the president, committee, and members of the Taunton branch of the Somerset Bee-keepers' Association, express their sincere regret that Mr. Anderson should have to issue such an unfavourable report after so many years of arduous and painstaking work in the interests of bee-keeping, as well as their thanks for his unwearied services;' also, 'That Mr. Anderson be invited to hold a general meeting of the County Association at Taunton on an early date.' The meeting then proceeded to the election of officers. The hon. sec. said he had accepted that post very reluctantly, as he was a business man and he had very little time to spare. Provided, however, they could not find a better man he was willing to serve for another year. The Chairman was sure they could not find a better man. Mr. Smith was then re-elected.

The Rev. H. F. S. Gurney had resigned his place on the committee, and on the motion of Mr. H. Maynard, seconded by the Chairman, the Rev. H. S. Hume was elected to succeed him. The committee now stands as follows:—President, Mr. C. E. Lance; Rev. W. B. Caparn, Rev. H. S. Hume, Colonel Lowis, Mr. J. Buckland, Mr. E. S. Hammond, Mr. C. Lewis, Mr. H. Maynard, Mr. J. Scarlet, jun., Mr. A. J. Smith, Mr. C. Tite, Mr. J. G. Vile; hon. sec., Mr. A. J. Smith. Mr. Penny proposed and Mr. Tite seconded a vote of thanks to Mr. W. B. Maynard for his services as hon. sec. in the past. This was carried unanimously; and Mr. Maynard replied.

A conversazione followed, and Mr. C. Tite delivered an address on 'Bee-keeping, for pleasure and profit.' In his opening remarks, he observed that he intended to pass over many matters which would interest those who did not keep bees, as he was aware that the members of the association were already well acquainted with the principal facts connected with bees and their management. His aim would be first to remind those who had begun bee-keeping as a source of amusement that it really was capable of affording interest and pleasure of a high order, and then venture to offer a few hints for the extension of their research. Secondly, to point out to those who wanted to make a profit by the pursuit that an apiary could be made to yield a very fair return for capital invested provided it was conducted on business lines. Those of his hearers who belonged to the class first referred to he strongly urged to start an observatory hive or two, so that they might test for themselves the theories

of scientists, and note carefully the life history of the bee in all its interesting stages, which he then referred to in detail. If they did this he thought they would all agree with Mr. Cheshire, who said that this was a 'field which must repay every investigator, while it must bring to our mind strange thoughts of the oneness of all things, whose interworking is the outworking of beauty, order, and development, the limit of which the dispensation of the fulness of time alone can reveal.' After referring to the writings of Cowan, Dzierzon, Langstroth, Lubbock, and others, the lecturer pointed out a number of matters still open for investigation which offered a fertile field for interest and study. He then turned to the more practical part of the subject, remarking that bee-keeping was one of those minor industries that might well be taken up by cottagers, market-gardeners, and others of similar occupations. There was no royal road to success, but if beginners would be content to commence on a small scale, and to gain their experience gradually, there were few men in the rural districts who could not make bee-keeping pay. The great outcry was that there was no market for surplus honey, but this he considered ridiculous when many thousands of pounds were being paid annually for imported honey. Moreover, he had met with many instances in the county where, in the same town or village, one man could sell all he had to spare and was compelled to buy in order to meet the demand, while another could not find purchasers for half his stock, and what he did sell was disposed of at a lower price than his neighbour obtained. The explanation of this was simple—one man was a better salesman than another, and probably put his honey upon the market in a more acceptable form. Another objection to bee-keeping, from a business point of view, was that the price of honey had fallen considerably of late years. This was perfectly true, but the yield of surplus under the improved system of management was so much greater than in days gone by that the decreased value was more than compensated for. Mr. Tite then gave a number of figures to prove this, mentioning among other matters that a series of returns obtained by the Rev. C. G. Anderson, hon. secretary of the Somerset Bee-keepers' Association, in 1884, from various parts of the county, showed an average yield of 57 lbs. from 230 stocks. Mr. Tite then referred to the work of the Somerset Association, and to the self-denying labours of Mr. Anderson. He also spoke of the great improvement in the literature relating to bee-keeping; and, in conclusion, urged his hearers to do their utmost to spread a knowledge of humane bee-keeping amongst their friends and neighbours, so that the use of super-less straw skeps and the cruel custom of suffocating bees may soon become things of the past.

A cordial vote of thanks was passed to Mr. Tite for his paper, on the proposition of the Chairman. A number of bee appliances and books on the subject, lent by Messrs. Neighbour, of London, Mr. James Lee, and others, were exhibited by Mr. Tite; also a set of photographic and microscopic slides illustrating the anatomy of the bee and work in connexion with the apiary, which were kindly lent for the occasion by Mr. Alfred Watkins, of Hereford. Mr. W. N. Griffin, of Reading, sent samples of his 'honey dubbin,' and Mr. C. Lewis, of Fore Street, Taunton, also had some model bee-keeping appliances on view, as well as a supply of confections, liqeurs, &c., in the manufacture of which honey is largely used. Refreshments were provided, and the proceedings concluded with a vote of thanks to the Chairman.

WIGTOWNSHIRE APIARIAN ASSOCIATION.

The annual meeting of the members of this Association was held on Friday, February 17th, at the George Hotel, Stranraer. Mr. McNally, Glenluce, occupied the chair, and amongst those present were Messrs. Ross (Governor of the Reformatory), Fleming, Wither (members of the Committee of Management), and others.

Before proceeding with the ordinary business, the Chairman called upon Mr. Ross to make a presentation to their esteemed Secretary, the Rev. J. B. Robertson, for his valuable services to the Association.

The presentation consisted of two drawings in oil, executed by Mr. Nairn, artist, West Regent Street, Glasgow. The committee had entrusted Mr. J. D. McNally, Glasgow, to make the purchase. They each bore the following inscription:—'Presented to the Rev. J. Balfour Robertson, of Leswalt, by the Wigtownshire Apiarian Association, in recognition of his services.—17th February, 1888.'

Mr. Robertson, in reply, said that he did not know how he could really thank them for the very handsome present they had given to him. He looked back to the past, and to his connexion with the Association, and he felt he did not merit half of the kind words the Chairman had used regarding him. Some six years ago the Wigtownshire Horticultural Society did not grant prizes, but allowed an exhibition of honey. He then met Mr. McNally, of Glenluce, for the first time, and he ventured to think that the super of honey he showed was a good one. After that some correspondence appeared in the local papers, and a suggestion was made that an Association should be formed. He happened to reply to that letter, and afterwards the Apiarian Association was formed. In 1882 he had stated, and he did not think he was wrong, that all the honey gathered in Wigtownshire did not realise 50*l.* per annum. After six years he did not think he was wrong in saying that the honey gathered in the county and sold in the market did not realise less than 500*l.* That was, no doubt, particularly realised through the benefits of their Association. He referred to the difficulties they had to encounter at the outset of their Association, and the statement of a landed gentleman of the county that the Association would only exist for the benefit of a few, and not for the working man. This same gentleman had since stated that the Association had conferred great benefit on the working people, whose gardens were graced with hives. With reference to the making of money by bee-keeping, Mr. Robertson gave his own experience, showing that a good profit could be realised, and that even in the hands of a raw amateur not less than 30*s.* per hive could be realised. Mr. Robertson concluded by thanking the members heartily for the present of the pictures, which, he hoped, would long grace his manse, and be handed down by him to posterity.

The Chairman said that their Association, though small in numbers—at the commencement they were only seven, but now numbered more than thirty—had all heartily contributed to the proposal to make this presentation of these handsome oil paintings to the respected and honoured Secretary.

A vote of thanks was given to the Chairman.

Inverted Hives.—What was said in 1842 about them by John Wighton in his *History and Management of Bees*, p. 75:—'The inverted hive is better adapted to adorn the lawn and garden, and to amuse the curious, than to supply the purpose of the practical bee-keeper; while its expense is an obstacle to its general use. The name explains its principle, which wars against the natural habits of the bees in the construction of their cells, whence its position must either cause the honey to drop, or compel the little architects to alter their rule of building. All dirt also, and many of the dead, must fall to the bottom of the inverted cone, whence it cannot be removed—a manifest evil. In other respects the hive differs little from those on the storifying plan, and though I have tried it for years I have obtained from it scarcely so much as from one of these last.'

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

BEE DISEASE (So called).

[1505.] I consider this, when the symptoms are clearly given, only another name for pollen-cold, or what is more commonly known as hay-fever. A bee-keeper (1366) consulted his doctor during an attack, and was told it was analogous to hay-fever, but evidently arose from some other cause, as he suffered from it throughout the year. Let us place side by side the symptoms of bee disease as shown by Mr. Heddon (Ed. foot-note, page 517, Vol. xv.), and the catarrhal symptoms of hay-fever as given by (now) Sir Morel Mackenzie in his work on that disease.

Symptoms, &c., of Bee-disease.—HEDDON.	*Catarrhal Symptoms, Hay fever, p.* 31.
First felt ten years ago itching sensation in ears, gradually extended to mouth and near root of tongue. Later on severe sensation in roof of mouth.	Itching, smarting sensation in nose and eyes, and sometimes in cavity and roof of mouth.
Eyelids itch and burn followed by swelling. After three years found out to open a hive, and breathe odour of bees, brought on the irritation.	Not unfrequently the attack commences with a feeling of extreme irritation of the inner angles of the eyelids: occasionally the eyelids became puffed so as to almost close the eyes.
Irritating and tingling sensation crept down bronchia until woke up with asthma.	The asthmatic form of the complaint may be superadded to the disorder just described.
Symptoms reappeared on coming back to his bees after a fortnight. Since ceasing working in apiary has been free. Disease reappearing on bee flying past his face, severe paroxysm; speechless eight hours.	Difficult breathing may continue, with only slight remissions, as long as the sufferer is exposed to the influence of pollen. The paroxysm may pass off in a few hours.
Bee disease symptoms of 'A Bee-keeper' (1366). For last three years suffers from what appears like violent cold in head, comes without warning, with frequent sneezing and continued running at eyes and nose, lasts a few hours, sometimes one or two days.	Dr. Roe thinks everybody who is subject to hay-fever *has* a cold in the head sometime during year. Dr. M. M. says the irritation of the lining membrane of the nose causes running of the nose and eyes, and paroxysms of sneezing quickly ensue, followed by an abundant thin discharge from nose.

We are told by various authors that hay-fever is produced by the pollen of grasses and flowers, and it is proved that pollen is an essential factor. I must, however, say that it has been attributed to an excess of ozone in the air. Dr. Blackley studied the effects of benzoic acid (*pace* 'W. B. W.') found as it is in sweet vernal grass, coumarin, essential perfumes of peppermint, juniper, rosemary, and lavender, *in vain* for symptoms; and it remains beyond doubt that hay-fever is caused by the irritating action of pollen-grains on the mucous membrane of the nostrils in the first place, probably next by long fingerlike growing of the intine of the grain absorbing moisture by a process termed osmose, and penetrating deeper into the tissue, thus increasing the irritation. Finally the chemical action on various parts of the throat and bronchial tubes of the contents of the burst grains will complete the list of causes for the symptoms above given. Such pollen-poisoning must be a very distressing affair to the small percentage of people subjected to it, for it has been calculated (Herapath) that in 'the granular matter of pollen-grains of several orders of plants there is forty-six per cent of a peculiar inflammable azotised principle *insoluble in nearly every liquid*. Mackenzie also says that as pollen granules are only one-tenth the size of blood-corpuscles, they may enter the blood-vessels by actual penetrations of the walls,' circulating, and thus causing the fever. All pollen-grains, it must be understood, will not cause annoyance, but only peculiar kinds, and these only upon peculiar idiosyncrasies of constitution.

For example, Dr. Marsh has stated that in America only the pollen of the Roman wormwood (*Ambrosia Artemisiæfolia*), is the cause of hay-fever, but this opinion is not generally received. Grasses, too (Indian corn excepted), have slight effect in America. The English and Americans are almost the only people subject to hay-fever, and it would be interesting to learn if any of our Continental brethren are subject to this alleged bee disease.

Again, those affected consist almost entirely of persons of some education and of fair position, they also nearly all belong to the highly energetic class, and are of generally nervous temperament. Let us now give a glance at the cause of pollen-poisoning, *alias* hay-fever as it affects the bee-keeper. It is agreed on all hands that the bee-keeper is only punished when he opens his hives.

If we read what Pastor Schönfeld tells us (p. 12, *B. B. J.*) on 'What do bees use in winter when the pollen collected by them is exhausted?' we shall find plenty of evidence that there is plenty of pollen at hand in the hive in winter, in old combs, cell-walls, and margins, membranes left by the nymphs, and in the excreta of larvæ at the bottom of cells. He shows that even the stomach of the bee, let alone that of the larva, is unable to make all the pollen-grains yield up their contents, by reason of the hardness of the extine resisting their digestive or assimilative juices. Now when bees *go out* of their hives silvern and golden in hue, the body hairs covered with pollen, bent, as the insects are, in making the most of a honey glut, and leaving the pollen-cleaning until dark, the whole hive will be not unlike a flour-mill, the air charged with floating grains. If one, at this time, only take a peep under the edge of quilt (even has a smell at the bees, as Mr. Heddon puts it) a current of hot air rushes out of the opening, carrying on it myriads of pollen-grains to the nostrils. By the showing of various bee-keepers, the disease instantly begins its course. What theory so reasonable as that he gets it from pollen-grains fanned about by multitudes of agitated wings, especially when the apparent causes and symptoms are so identical with those of hay-fever known under other names, *e.g.*, pollen catarrh, summer catarrh, idiosyncratic catarrh, rose-cold, peach-cold, and pollen poisoning?

I do not doubt that the bee which flew close past Mr. Heddon's face, and gave him an attack, instead of discharging poison, wafted pollen-grains, which he inhaled. In short, with the infinitesimal percentage of people who are subject to pollen-poisoning, to keep off certain flora gives immunity, and equally keep away from the pollen collected by the bee, and there is no bee-disease. The two must be identical.

My remarks, however imperfect, would be still more so if I did not say something with regard to prevention, &c. Dr. Morel Mackenzie says, 'If the poison be continually introduced into the system, the antidote, if

one exists, can have but little chance of effecting a cure. Change of residence, from the country to the seaside or town, is recommended,' (keep off the bees). And (strange to say, but welcome to bee-keepers), he recommends also a veil to be worn over the face. 'I have found a "double gossamer" veil, which can be had in several colours, answer the purpose in some cases. Protected in this way many people predisposed to hay-fever escape altogether.' *Verb. sap.* Tobacco-smoke sometimes affords relief. One part salicylic acid to 1000 of water, snuffed up the nostrils cuts short the disease. (Binz.)

Prevention being better than cure let those who are susceptible wear a fine silk veil.—R. A. H. GRIMSHAW, *Horsforth, near Leeds.*

COUNTY BEE-KEEPERS' ASSOCIATIONS.

[1506.] There is one thing that might be encouraged through the *Journal* and county Associations' reports which I do not remember seeing anything about, viz., each county committee to get one practical bee-keeper in each district who will fix five or six days, or rather evenings, during the months of May, June, and July to welcome members of County B.K.A., and to show and explain any different hives or supers which he may be working in his apiary or anything else.—JOHN R. CRITCHLOW, *Maer Farm, Newcastle, Staffordshire.*

SENDING QUEEN-CELLS.

[1507.] Mr. Sharp in his article (1485) inquires, should he take his young queens to his allotment to be fertilised with foreign drones he intends raising? I would say no. Let the following incident suffice:—A bee-keeper, distant exactly two miles from this village, about six years ago introduced Italian queens into his apiary, the following summer young queens from three different hives in the village had mated with the Italian drones, their offspring being finely marked in the two upper rings of the abdomen; I found them quite as harmless as my own old-fashioned blacks.

To encourage Mr. Sharp, at his request I will have pleasure in forwarding him as early as possible this summer a few ripe queen-cells, which he could make use of either in his old or nucleus hives. His foreign drones and pure Scotch black queens would impart fresh blood into his apiary. Foul-brood unknown in this locality.—JAS. PRINGLE, *Cockburnspath, N.B.*

THE TIME TEST.

[1508.] I quite understand 'H. J. B.' (1496) feeling disgusted, and saying that it was his first—and last—attempt to obtain the third-class certificate. I don't wish the rules to be altered to admit any bee-keeper to be a third-class expert, but I do think failing to find her majesty in a given time ought not to throw a candidate overboard, which appears from 'H. J. B.' to be the case. The men we want for experts are those who are thoroughly practical, and can work a good return from their own stocks. One of your correspondents, some months back, said all District Secretaries and local advisers (if I remember right) ought to hold a third-class certificate, and I say so too; but how many of these gentlemen, who are well-known bee-keepers, will come forward to be plucked and sent back empty? I know one District Secretary who would have been a candidate last year only for the above cause. The only reason he had for wanting a certificate was in case the County B.K.A. got short of funds he could take the expert's tour sometimes in his own district. This gentleman, to my knowledge, has spent weeks in the last five years for the good of our County Association by starting new members, attending committees, shows, &c.; at least he is always ready to give a helping hand when his own duties will allow him,—*all gratis.*

It would not be a bad plan, after candidates have applied to be examined, for County B.K.A. Committees to say whether they have made a good stand as practical bee-keepers and also successful exhibitors, as I am sure if men are qualified to hold a certificate they will be well known by part of the County Committee.—SNOWDROP.

A USEFUL SUGGESTION.

[1509.] Your correspondent 'H. J. B.' (1495) has hit on the thing wanted to promote the sale of honey in my opinion, that is, better advertising, as there are thousands who only know honey by name, if they have heard of it at all; and if they do know more about it, where are they to get the pure British honey from which can be depended on at a market's price? What we want is a more uniform price, quality, and get-up for sale, and thoroughly bringing before the public. One of the objects set forth by County B.K.A. is to encourage the sale of honey, which I am afraid is little heard of, but still hon. secs. have plenty to do without selling for members their honey. A thought struck me several weeks ago that a honey club might be worked in connexion with the County B.K.A. something on the following lines: To appoint one hon. sec. for each thickly-populated district, with a small committee to arrange prices, rules, &c. Each member who joins this club must take one or more shares in the year's turnover, according to the amount of honey he wishes to sell, each share to represent 25 lbs. of honey at from 1*s.* to 2*s.* each. By this plan all members would be on the same footing, for if one has 200 lbs. to sell, he would have to pay eight times as much as one with only 25 lbs. The small subscriptions would go towards printing, postage, carriage of samples, &c. I think if the above could be put in working order, it might be tried for one year to see how it answers. I should like to hear the opinion of other bee-keepers through your valuable *Journal.*—SNOWDROP.

SUGGESTIONS.

[1510.] The *B. B. J.* so ably and wisely conducted by you, is a weekly source of pleasure to me in studying the marvellous works of God. The *Journal* supplies me with comb upon comb of beautiful honey in the shape of help and advice. I should therefore be pleased if I could contribute one single cell, or even a bee-load of honey, to the hive of knowledge, in gratitude for the knowledge I have extracted. I will jot down a few remarks for you to glance over, and should you deem any of them of interest to amateur bee-keepers, please make use of them as food for the *Journal.*

My apiary consists of twenty-four stocks; fifteen are the produce of last autumn's condemned bees. I endeavour to make everything required about the apiary, for to my mind half the charm of bee-keeping is the construction of the appliances. By rising in summer three or four mornings a-week before the bees, say from 3 to 5 a.m. a good amount of work may be accomplished, and personal health greatly benefited. A Britannia Company's patent circular saw, which is perfection, adds eighty per cent to the pleasure of a bee-keeper's life. This is only my second season of bee-keeping on the most approved lines. But when a lad of thirteen I had fourteen hives and made all the houses, &c., for them. Most of my present hives consist of an inner hive, $11\frac{1}{2} \times 16$, and an outer case 20×20 inside measure. I think double-walled hives are by far the best.

Suggestion I.—I find the most satisfactory way of keeping the water from getting in at the junction of outer

cases is by nailing strips of tin the length of the side by one inch width on each side. The tin should project $\frac{5}{8}$ inch beyond the side of the case, and as it is free at each corner, it fits nicely over any slight variation in the thickness of the case below. The strips of tin can be cut and nailed on very quickly if the proper mode be adopted. The bottom case of all needs no tin strip, since it projects one inch over floor-board, and strips of wood nailed round inside keep it resting on the floor-board.

Suggestion 2.—The best entrance slides I find to be made thus:—Nail a strip of tin the length of entrance, say fourteen inches, and one inch wide, just above the $\frac{3}{8}$ inch entrance. Then cut two strips of tin $7\frac{1}{2} \times \frac{5}{8}$ to slide between the tin and the case side. Turn up one end half inch of each tin slide at right angles to work the slide by. Then screw a piece of wood the length of the outside case (mine is twenty-one inches), $\frac{5}{8} \times \frac{5}{8}$, just under the $\frac{3}{8}$ inch entrance and flush with it, and then the slides run nicely on the wood. The flight-board, bevelled at the edge, rests up against the $\frac{5}{8}$ inch strip of wood and is hooked on to the case side. Perforated zinc slides can be worked without the tin ones being entirely removed. Wooden slides for narrowing the entrance are too much acted upon by the weather to be perfect. The tin slides are practically unaffected by weather, and are more quickly made. Porches I have discarded as not necessary.

Suggestion 3.—I have found the following frame-lifter of great service. Bend a piece of $\frac{3}{16}$ inch wire into a semicircle of fourteen to sixteen inches diameter, to suit hive and frame and bend the ends up $\frac{3}{4}$ inch at right angles. Then you can slip the right angles under the top of the frame and lift it with one hand and turn the frame about as desired. The cost of this lifter is about a penny, or less. I have not seen so simple and cheap a frame-lifter mentioned in *Journal*, so I draw attention to it as it might be of use to amateurs. It was of great service to me last summer, enabling me to manipulate without smoke, &c.

I should like to hear some suggestion on a quick, cheap, and effectual mode of shading hives from the glare of the snow. I unhook my flight-boards, which are 21×18, and slant them against the hives. This is effectual, but it takes some time to do this for even twenty-four hives. I should also like to know if roofs without any inclination for the rain to run off have been much tried in this country, and with what results. I am thinking of making all future houses with level roofs. I have about six now and they have been tried for over six months and not a particle of moisture gets through them. I cover the joints with strips of tin. It is quickly done, and if well nailed and painted no wet can possibly get through. The slight drip there may be in front does not trouble the bees, and half-inch inclination to the back avoids even this. The advantages I find are, (1) the roof dries quicker, as the sun strikes it more directly than when inclined away from the sun. (2) More quickly made and easier for an amateur to make. An eleven-inch plank, ripped up the centre, just gives the sides of the roof a nice depth of five and a half inches. (3) They make good tables for placing things on. They are light to lift if bare half be used for the top, five-eighths for front and back, and half inch for the sides. I make my roof come down over the case one half inch; strips of wood being nailed round the inside to allow of that amount. I use nothing but good pine in making hives and cases, &c.

In the above remarks there may be nothing of profit, even to amateurs. But as I have profited for two years by hints on various subjects given in the *Journal*, I am wishful to contribute, if possible, honey to the hive, and so far I have been an unprofitable bee for two years. Wishing you, Mr. Editor, continued success in your arduous duties,—I am, yours faithfully, R. T. Shea, *Little Wakering Vicarage, Rochford, Essex, February 22nd*, 1888.

NOTES ON BEE-HIVES.—SECTIONS.

[1511.] In reading *Gleanings* of the issue of the 15th January, 1888, to-day, I notice some questions and answers that bear directly upon the important subject now being considered or mentioned in the *British Bee Journal*, and of which I make a few extracts for the benefit of some of your readers, hoping you can kindly allow the space. *Question.* 'Is it best to fill section-boxes full of foundation, or use starters only one inch in width?'

Favourable opinions.

Full.—C. C. Miller.
Fill full.—Dr. A. B. Mason.
Fill full.—Geo. Grimm.
Fill them full.—W. Z. Hutchinson.
I prefer a full sheet.—Paul L. Viallon.
I prefer to fill the section.—G. M. Doolittle.

So far as my experience has gone I prefer to use full sheets of foundation in my surplus boxes.—James Heddon.

I have found it best to use full sheets, though I often use triangular starters.—A. J. Cook.

Full-sized sheets have a chance to pay for themselves whenever the bees cannot keep up with their income.—E. E. Hasty.

It is much more profitable to fill them full. If quality only is considered, starters are better. If foundation is made then, and used fresh, there is practically no objection to its use in full sheets.—James A. Green.

The office of starter one inch wide is only to serve as guide-combs. They would not increase the crop of honey much. But to fill the section with foundation increases the crop materially. It does almost as much good as to fill them with newly-built comb.—Chas. F. Muth.

Friend Root states that Mr. Muth seems to have over looked the fact that recent decisions place full sheets of foundation even *ahead* of newly-built comb; that is, wheref the cells are drawn up to anything like full length.

Question. 'Is a triangular starter, with the point reaching nearly to the bottom of the section, as good as a full sheet of thin foundation?'

No.—Geo. Grimm.
No.—Dr. A. B. Mason.
No.—W. Z. Hutchinson.
I think not.—C. C. Miller.
I use full sheets.—G. M. Doolittle.
Not in our opinion.—Dadant and Sons.
No, not in my experience.—James Heddon.
I prefer a full sheet.—Paul L. Viallon.
It answers very well, but I prefer full sheets.—A. J. Cook.

A triangular starter is not as good as a full sheet of foundation. The section will not be filled in the same time as when full sheet are given.—Chas. F. Muth.

If it pays to use foundation, use it. Why stop half way? *Partly filled sections give the bees a chance to build two sizes of comb in the same section, and make a botch of things.*—E. E. Hasty.

No. Firstly, because it will not be finished quite as soon. Second, because it will not be as well finished. The foundation should be cut as large as possible, without having it kick from the lower corners touching the sides, when put in with ordinary care. This gives a square, solid comb of honey, firmly attached all around that is easier to shake bees from, looks much better, and is much less liable to break out in shipment.—James A. Green.

T. Bonner Chambers, F.L.S., *Tref Eglwys, Caersws, Montgomeryshire, Feb.* 16, 1888.

(*To be continued.*)

THIRD-CLASS EXAMINATION.

[1512.] A candidate that enters for the third-class examination ought to know the time that is allowed him to drive his bees and find the queen. Under these circumstances he should repeatedly practise driving and picking out the queen, previous to the date of his examination, timing himself on each occasion.

If a little more pains were taken by candidates to make themselves proficient, we should hear of less complaints after the examinations were over. It is not a matter whether the judge can find the queen in so many minutes; he is not present to do the work, but to see that it is done. So if the candidate fails to find the queen in the time that is allowed him it would be much better taste on his part to hold his peace than to try and bring discredit upon the judge when the whole fault lies at his own door.—(QUEEN.

[We have perused the instructions given for third-class examinations, and we find that no specified time is laid down for driving the bees from skeps. The candidate is no doubt credited in accordance with his expedition, care, and general efficiency in his work. We think the advice of our corrrspondent is very much to the point.—ED.]

WEATHER IN AMERICA.

[1513.] You have no idea what storms of snow we have had. You, perhaps, remember the little town of Red Hook, about two miles east of here. About two weeks ago I sent my boy Joe with horse and cutter (single-seated sleigh) over to Red Hook. Our waitress Addie accompanied him, and they left here at 12.30 p.m. It snowed some fourteen inches the night before, and at 12.45 p.m., fifteen minutes after they left, the wind started up from the north with considerable vigour, and in twenty minutes was blowing half a gale. Shut up in our house and placed, as we are, on a hill or ridge-top, we did not appreciate the drifting of the snow. Hour after hour went by and no tidings of the two. About four o'clock one of the men working on my mother's place came to the house and reported that about one hour before, with infinite labour, my sister's coachman had reached home in a sleigh and that he declared it impossible for Joe to reach home that night; but to our astonishment, not many minutes later, in walks Joe, looking quite exhausted. He reported having left the horse at a livery stable, and that Addie had stepped into a store to make some purchases, and when her errand was over was astonished to find that to get anywhere she had to wade in soft snow up to her waist! Joe had beat his way through snow up to his neck, as he expressed it, and when I saw the roads and paths subsequently I did not doubt his word.

We have never seen anything to compare with this storm since 1857.

Of course it was useless to send out men that afternoon (January 26th) or evening, as the gale was still blowing. About 10 a.m. next day the wind subsided, and I at once ordered all the men on the place out with shovels and our snow-plough with heaviest team. Of course all our neighbours turned in and helped, and by night the roads were opened part way to Red Hook. From a point about half-way over the teams were compelled to leave the road and strike into the fields. A detour of about a mile was made before they could get into the town. Gangs of men were out working *our* way, so that the road, or I had better say 'trail,' was passable by 5 p.m., and Joe managed to bring home Addie and the horse. Some of the drifts were ten feet high.

The temperature has been toying with zero altogether too freely: several mornings at ten o'clock the thermometer has stood at 15° Fahr. They are harvesting ice seventeen to eighteen inches thick, as clear as crystal. I filled my ice-house in four days. We had a thaw yesterday for the first time in six weeks. We are all tired enough of this wintry weather, and shall greet with joy the first signs of spring.—J. A., *February 5th*, 1888.

[The above is an extract from a private letter received 20th February, and will give some idea of the weather our friends in America are having.—ED.]

PAINTING THE INSIDE OF HIVES.

[1514.] Having had hives with all the woodwork (except the frames) of the interior painted, and wintering most satisfactorily for ten years, I differ with your correspondent Mr. Adcock (p. 105) in the advice he gives. In the volume of the *B.B.J.* for 1887, p. 119, I gave my reasons for adopting the practice, which had been previously recommended in 'Useful Hints,' and which was subsequently advocated by another writer at p. 143.

Since I wrote that letter, now just a year ago, I have had very fair success with my bees. My honey yield has been good, and there is nothing to be dissatisfied with the way the bees have passed through the varying changes of this past winter.

My hives, all of which have the insides well painted, are tenanted by strong stocks, and I find no pools of water in them such as Mr. Adcock found in his. Might I suggest that Mr. A.'s hives have not sufficient width of flight-hole for the winter? Mine always have the full width of nine inches, which I consider has a great deal to do with keeping the interiors dry. As to his hives with floor-boards so made or so placed that one 'contained *more than a pint* of water,' and the others were 'more or less covered with water, and a great number of dead bees *floating in it*,' I cannot understand it. There must be something astray, or the hives are not set level, or with the least possible inclination from back to front—I give mine a bare quarter of an inch fall—or is there not another possible cause for the extraordinary watery condition of Mr. A.'s hives? Could there be any cracks or chinks in the roof through which the rain penetrated?

I hope some other bee-keepers who have given the subject a fair trial, such as I have done, will write to you. Many mistakes are often made by beginners, who attribute results to wrong causes from want of thought and careful observation of all the circumstance of the case.

If I possessed five hundred hives I should paint the insides of every one in order to have no damp, water-soaked wooden walls about my bees.—H. W. LETT, M.A., *Aghadery Glebe, Loughbrickland, Co. Down.*

INSERTING FOUNDATION IN SECTIONS.

[1515.] Under the above heading (*British Bee Journal*, page 5, January 5th, 1888) an article is quoted from the *American Bee Journal*, written by E. S. Eden, of Canada, and the article commented upon in the *B. B. J.*, and a statement made that a Mr. James Lee has invented a superior method of putting in foundation, and we in Canada and the United States are to take a note of the fact that he (Mr. Lee) is about to patent this and a brood-frame similarly constructed in America.

It might be interesting to know that Mr. Eden was simply working in an advertisement for his own ingenuity, and to draw attention to the subject, so that it would pave the way for the fruit of his thoughts. Mr. Eden has invented a machine which also does away with all the difficulties he mentions, and can be worked very rapidly. I am not in favour of a writer 'blowing his own horn' for selfish ends under the guise of giving the public information. Nevertheless, I doubt very much if Mr. Eden's machine, or that of Jacob Alpaugh, St. Thomas, who has also invented a machine for putting foundation in sections, will be very much improved upon for some time. Mr. Eden has his machine patented. I know of no man who has made any money out of a patent upon bee-keeping appliances in Canada. However, should Mr. Lee see fit to patent his invention in Canada, I trust he will not regret his decision. Of course, I am not in a position to say anything about the invention, but unless very inexpensive the demand for such will be very limited; bee-keepers prefer a little

extra trouble to extra expense. An important feature in the machines here is an iron plate heated by a lamp; upon this plate the edge of the wax is melted. It works well and rapidly.—R. F. HOLTERMANN, *Brantford, Canada.*

YELLOW RACES.

[1516.] Will you kindly inform me in an early issue as to why all authors on works on bee-keeping, English and American, as well as bee-keepers when referring to the colour of certain varieties of bees, make use of the terms *yellow-banded, yellow-striped,* &c., when the colour alluded to is not at all yellow, but a dusky orange?

I may mention that I possess stocks of Cyprian, Italian, Carniolan home-raised from Mr. Simmins, and also pure bred from Mr. Benton, Syrian, and Palestine varieties, together with the common English kind, and no yellow whatever occurs on any of these bees, but only bands of a warm grey tint and a dusky orange shade in connexion with the dark brown colour commonly found on most races.

It would be very interesting and valuable if you could prepare, in connexion with the *B. B. Journal*, a sheet in chromolithography for framing, giving the various races of bees with their respective forms and colours. Queens, workers, and drones, of each race might be represented, and perhaps some of the hybrid kinds. I feel certain that the cost of such a sheet of illustrations would be gladly met by your subscribers, and I should have much pleasure in preparing gratis the necessary drawings for the stones.—W. G. MUCKLE. *Lowes water, Cumberland.*

[Although not generally of a bright yellow these races have been called the yellow races because of the yellowish tinge of their bodies. The Italians are described by some German writers as having orange-yellow belts, others say yellowish; and we believe they have been generally called yellow races because of this yellowish hue, and in contradiction to the brown or what are also called black bees. We are not inclined to quarrel with the term, for, after all, orange is only a reddish shade of yellow resembling gold, and the word itself is derived from the Latin *aurum*, signifying gold. Yellow is also defined by Dr. Ogilvie as the colour of gold, a golden hue, and is also derived from gold. in Danish *guld*. These bees have also been called golden bees; Virgil says:—

> 'Two different kinds of regal bees behold,
> The better bears a coat that glows with gold.'

And again,—

> 'The better race refulgent hues unfold
> Bedropt with equal spots of glistening gold.'

Dr. Pollmann, a leading German authority, in his book on the value of the different races of bee, describes Italians very minutely and says the workers have orange bands instead of brown. Some queens, he says, have the forepart of the abdomen golden yellow, or orange-coloured, and others have the whole of the abdomen golden-yellow as though cut out of ducat gold. Some bees are much brighter than others, and this brightness is still more apparent when we look through them, especially if the sun be shining, then we think golden-yellow would not be a very inappropriate name. The name of 'yellow races' is so established that we do not think it would be easy to change it. We are much obliged to our correspondent for his kind offer, and we should be happy to carry out his suggestion and publish a lithographic sheet of various races of bees if we could get them lithographed to our satisfaction. We have seen a great many attempts made in this direction, but none hitherto that have proved entirely satisfactory. —ED.]

BEES NATIVES OF ENGLAND.

Bees are mentioned in some of our earliest national records, and the mention of them is such as demonstrates how highly they were valued. Nor is this a cause for surprise, inasmuch as that mead or metheglin was the choicest drink of the Britons' feasts; and although the household of the Prince of Wales one thousand years ago comprised but twenty-four officials, the eleventh of them was the mead-maker, and he ranked next before the royal physician.

So highly was superior mead prized in those days that one of the royal privileges was to have the first offer of every cask that was intended to be sold.

We are accustomed to consider our forefathers of those days as rude and barbarous, and they were so if measured by our present standards of habits and education, but compared with contemporary nations they appear to advantage, for their laws and customs were fully equal in good sense to those of their neighbours on the Continent. As an illustration we will quote from the laws relative to bees enforced by Howel Dha, who was chief ruler of Wales about A.D. 940.

'OF THE PRICE OF BEES.

'An old hive is valued at 24 pence.

'A spring swarm at 16 pence.

'A second swarm at 12 pence.

'A swarm from a first swarm at 12 pence.

'A swarm from a second swarm at 8 pence.

'A swarm after the Calends of August at 4 pence, and that shall be the price until the Calends of November.

'After the Calends of November an old hive is valued at 24 pence, and the swarm which came off after the Calends of August shall not be considered as an old swarm before the Calends of May, and then it shall be valued at 24 pence.

'Three huntings are free (that is, you may follow them upon another man's ground), of a swarm of bees settled upon a branch, and of a Fox, and of an Otter, because they have no certain abode.

'Bees were first born in Paradise, and were driven thence on account of man's sin, but God blessed them: therefore mass ought not to be sung without their wax being present.

'He who finds a swarm resting on a branch in another man's land shall receive 4 pence from the possessor of the land, if the latter wishes to retain the swarm.

'No swarm shall be valued at more than 4 pence until it has remained quietly for three days and three nights in the same place, and that in fine weather. Of those days the first is required to ascertain whether it will settle; another in examining whether it will cluster, and the third whether it will continue here.'—*Wotton's Leges Walliæ, page* 254.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

JOHN MAIN.—1. *Sections.*—The sections mentioned are not, generally speaking, taken to by the bees. We do not advise sections narrower than $1\frac{3}{4}$ inch. 2. *Heddon Hives.*—These may be obtained from several of the dealers in appliances.

NORTH DEVON RUSTIC.—1. *Hoya carnosa* is a tender exotic and requires the protection of a warm greenhouse in this country. It is a pity it is not hardy, for we know of no plant, native or foreign, that secretes more honey than does this species of hoya. The

honey, however, does not hang on every petal as our correspondent remarks, but collects in pearly drops in the centre of each flower, which are deliciously sweet-scented and pretty. Each generation of these wax-like flowers proceed from the same flower-stalk, hence it is advisable to cut them as little as possible. 2. *Closing Entrances to Hives.*—We never close the entrances to our hives; they are now at summer width, but have a board resting against the porch of each to prevent the snow reflecting the light into the hive.

C. Marks.—*Bees in Roof.*—The bees, as you say, are no doubt between the roof and the ceiling; this could easily be ascertained by listening on a warm day, and their exact location found out. If the farmer thinks of removing a portion of the roof they could be easily removed, but if not the 'game is not worth the candle.' At the end of the honey-harvest would be the best time if they are to be taken for their stores, but if for the bees early spring. Use plenty of smoke, as the slates or tiles are being removed, and when the bees are thoroughly intimidated cut the combs out one by one, brushing the bees off into an empty skep. (See answer to 'A Novice in Modern Bee-keeping,' in issue of 23rd ult.).

Horace.—*Replacing old Combs.*—Towards the end of March, on a warm day, remove any surplus combs; insert new sheet-foundation about the centre of the brood-nest. Should the weather continue favourable give a fresh sheet of foundation about once a-week in the same manner, removing the outside comb. Feed gently but regularly, and take care you do not spread the brood-nest faster than the bees can with their increasing number cover all brood. There is nothing whatever to prevent you getting a full return from this hive during the coming season. Wired foundation is suitable.

Novice.—*New Hive.*—We are sorry to do so, but must condemn your plan. Just fancy trying it with Cyprians or pugnacious hybrids! Who could live to tell the tale?

R. M'Whirter.—*Queen Excluder.*—We always deprecate the use of excluder between rack and body of hive. It is rarely that the queen ascends; even if she does the portion of section in which she lays her eggs can be cut out. When upon being given back to the bees they will repair and make good any damage.

K. Sandall.—1. *Transferring.*—The advice we give is intended for the benefit of novices, and is the best plan for such; an adept can transfer at any time. 2. *Using Queen-cells for Re-queening.*—Yes, if they are inserted twenty-four hours after removal of queen, or they could be placed, if in queen-cell cages, in the hive immediately upon such removal. A queen-cell cage is a cone of wire cloth into which the cell is put; the apex is open. Through this opening the queen emerges, the sides of the cell being protected from the attacks of workers by the wire cloth.

R. E. T.—1. *Neglected Honey.*—Remove all the combs having uncapped honey in them and place them in a basin in the oven. When the wax is all melted allow it to cool. The wax can then be removed in a sheet; feed the honey back to the bees in the spring. The few frames can be given the bees to clear out, but not until they commence working before the honey-flow sets in. 2. *Hives.*—You will find a bee-house just as expensive and not half as handy. To hold eleven or twelve frames is the best, as such a size is easily 'tiered up.' 3. *Foundation in Frames.*—Whole sheets. We prefer 'Pelham.' It is very much a matter of individual opinion, though we strongly object to flat-bottom in the brood-nest.

C. Whiting.—The bees forwarded are hybrids.

A Grateful Reader.—*Glossary of Apicultural Terms.*—Your suggestion meets our views, and it will in an early number be carried out.

W. P. Meadows.—1. *Bee Flora.*—We have in previous volumes given this subject our best attention; but as we are continually receiving fresh subscribers we shall not lose sight of your suggestion. 2. *Railway Companies and Rates to Bee Appliance Manufacturers.*—In the year 1883 the British Bee-keepers' Association took a considerable amount of trouble, and incurred some expense, in placing the claims of the bee-keeping industry before the several Railway Companies. Printed memorials were prepared and signed by the executive of each County Association, and these were subsequently considered at a Conference of railway managers. A reply was in due course given by the Secretary of the Conference to the Secretary of the B.B.K.A. to the following effect:—'I beg to inform you that this subject has been fully laid before the different Railway Companies, and I regret to say that they do not see their way to make any reduction in the rates.' It will be found from the report of the Committee of the B.B.K.A. for the past year that this subject has not been lost sight of. We would suggest that our correspondent and others should communicate their views on the subject to the Secretary of the B.B.K.A.

D. R. Daly.—*Feeding.*—If you desire to get the full advantage of stimulating brood-rearing early in the season, as soon as the bees fly freely it will be well to supply them with liquid food (the receipt for which you will find in Cowan's *Guide Book*) and regulate the feeder so that only a small amount can be taken at a time. If the bees are not, through the weather being cold or other reasons, inclined to take the liquid food, flour candy can be placed under the quilt above the frames. 2. *Transferring from Skeps.*—Let the bees swarm, and twenty-one days after transfer to frame-hives. Whether it be better to transfer or unite should be determined by the strength of the stocks.

E. H. Turner.—The most exhaustive work is *Apidæ Europeæ*, by Dr. H. L. O. Schmiedeknecht. As a book of reference it is invaluable, and the numerous excellent illustrations are a great help in determining species. Professor Siebold on *Parthenogenesis* would be of great service in your special study. We shall be pleased to receive results of your investigations.

C. Wade.—You will get the information you desire by looking at advertisement of Messrs. Abbott in this week's issue.

Normacot.—*Mouldy Comb.*—There is no necessity for your destroying the combs. The pollen-filled cells are mildewed through being kept in a damp place. When dried rub them with a soft brush, and spray with salicylic acid; when required they may then be returned to the bees.

J. M'Gowan.—We are informed that Lee's sections will be in the market in the course of a fortnight. Some difficulty has been experienced in providing the requisite machinery.

Pike.—*Enamelled Cloth.*—The sample of cloth will be found serviceable. The shiny side is placed on the tops of the frames.

Received from Mr. T. B. Blow, of Welwyn, Herts, his Illustrated Catalogue of Bee-keepers' Appliances, 64 pages. We note that it has a small piece of scarlet cord, which makes it convenient for hanging up in the bee-keeper's room. It contains a number of new illustrations.

Received from Messrs. W. P. Meadows, of Syston, near Leicester, and J. H. Howard, of Holme, near Peterborough, their joint catalogue of Bee-hives and other Appliances, 48 pages. This catalogue embraces every article both of wood and of metal that is of service in the apiary.

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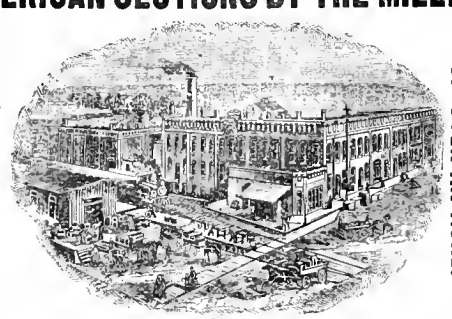

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THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

PRACTICAL WORK IN THE APIARY.

FEEDING.

There is, perhaps, no branch of work in an apiary less understood than feeding. Many think bees ought to find sufficient food for their own requirements; but they forget that we take away their honey, the very stores they have laid up for their sustenance. Besides, do we not feed our cows and other domesticated animals? Should we not be considered bad farmers if we expected our cows to give us a good supply of butter and milk without providing them with good food? It is not different with our bees. And both cows and bees, when pasturage is abundant, good, and rich, do well without our attention; but at other times we must furnish them with food, otherwise they suffer much, and the loss is to our own detriment. Langstroth says: 'Few things in practical bee-keeping are more important than the feeding of bees; yet none have been more grossly mismanaged or neglected.' This author treats the subject of feeding very fully, and, although his book was written nearly thirty years ago, the above remarks would apply with equal force at the present time.

How to feed and when to feed will depend upon the different purposes for which we have to feed. We will briefly consider the different reasons for which bees have to be fed. These are—for stimulation, for preservation, and for comb-building. The time and method of feeding, as also the description of food to be used, will vary according to the object the bee-keeper may have in view. For instance, in the spring and summer, when there is a great scarcity of pasturage and brood-raising is proceeding rapidly, bees must be fed, both for the purpose of stimulation and preservation. Stocks, which in early spring are so light as to seem to be of no value whatever, may be so stimulated into activity by regular and gentle feeding as to very shortly surpass in strength those left to themselves, and which appeared strong enough. Early feeding promotes early breeding, and strong colonies are the result. The bees may have sufficient stores in their hives, and some bee-keepers think it unnecessary to feed them at such a time; and we often hear nature appealed to, and the statement made that bees would help themselves to their stores as nature prompts them to do. This is true enough; but nature only prompts bees to take what food they actually require at such times for self-preservation only, and will not induce breeding until honey is coming in regularly. When the honey-flow is abundant, brood-rearing proceeds rapidly. Bees left to their own devices will develop themselves fast enough for their own preservation, and will be strong enough to lay up sufficient store for their own use. Is the bee-keeper, however, satisfied with this, or does he not aim at having a large surplus, which he can appropriate to his own profit? To insure this he takes advantage of the natural instinct of the bee; and without waiting until honey is coming in plentifully, in order to procure the increase of workers he will feed his bees gently and regularly, in order to have them ready to go out in large numbers when the honey-flow arrives.

In order to understand the advantages we may derive from feeding, we must bear in mind that the *queens lay eggs rapidly only when the workers are bringing in stores* regularly, and by stores we mean, not only honey, but also pollen, which they require for themselves as well as for preparing the food for the brood. We must also not forget another fact, and that is, when a colony is rapidly rearing brood, and it finds honey is scarce, the bees stop feeding and destroy the larvæ and eggs. In such a case they are thrown back in their development in a few days much more than they can regain in several weeks.

In the spring, when breeding goes on rapidly, as the brood increases so also increases the consumption of stores. Strong colonies are sometimes induced, by genial weather and abundance of blossoms which furnish honey, to consume the whole of their supplies in their endeavours to increase their numbers; and if at such times we have a few days of wet or cold weather they may be reduced to starvation. The early flowers also furnish honey to encourage development, but when this fails there is probably little honey and much maturing brood. A little judicious feeding would keep such colonies progressing, and make us independent of natural circumstances. The great secret of successful bee-keeping is in having strong colonies ready to gather surplus whenever a good honey-flow sets in. Now, it generally happens that before such a flow circumstances are not the best suited for the development of the colony to its full strength, so that the full advantage of the honey-flow is lost. Of course, the colony will develop during the flow, and be ready for the next, but the bee-keeper has irretrievably lost one source of surplus. Then, again, it often happens after the first flow there is a long spell, when the bees gather very little, and hardly enough to

sustain them; this will cause a relaxation of the breeding, and sometimes even put a stop to it altogether, so that the colony must build up again before it can lay in supplies. Gentle feeding at such times is beneficial, as it keeps the colonies up to their proper strength.

After the honey-flows are over and the honey taken away, late feeding becomes a necessity in order to preserve the bees through the winter. Then there are times when bees can be induced by feeding to employ their time profitably in building combs, which will come in useful for extracting purposes. In giving directions how to feed at different times and under different circumstances, we must bear in mind that bees require, in addition to honey, pollen and water. Another thing we must not forget, and that is, that the taste and smell of honey are likely to induce robbing; therefore, we must guard against this by giving food in such a way and at such times as to have little tendency to attract other bees. We would here strongly deprecate the plan of outdoor feeding as being both dangerous and wasteful. It induces robbing, and the bee-keeper not only feeds his own bees, but also those of his neighbours. The best method of feeding is undoubtedly inside the hive, on the top, or at the hive entrance; but this last plan should only be resorted to at night. Of course, these remarks only apply to syrup or honey feeding; it is different for pollen, which can be given outside the hive without danger.

There are two methods of feeding—gentle and continuous feeding and rapid feeding. Gentle and continuous feeding is so called from the fact that only as much food is supplied the bees as they need for daily consumption, and is stimulative in its effect, inducing a production of brood. Rapid feeding, on the other hand, is giving food in such large quantities as to enable the bees to store it in their combs for future use, and has the effect of checking the production of brood, owing to the cells in the brood-chamber being occupied with stores.

'THE WILEY LIE.'

Under this heading our contemporary, the *American Bee Journal*, in the issue of January 25th, page 52, takes our article 'Facts' in the *British Bee Journal* of December 28th, page 568, to task. The greater part of the article has been quoted by the *American Bee Journal*, but we wish the remainder had also been reprinted, as from that it reads: 'We know too well the practice of mixing glucose with honey, and the methods of detecting it, and how a London firm has been manufacturing another substance, palming it off as honey; but we feel confident that the bee fraternity, located in whatever part of the world, will, as the Cornish motto has it, "one and all" endeavour to stop such practices, prejudicial not only to the bee-industry, but injurious to the health of the community at large.'

From this it will be seen that in our midst other substances are tried to be floated on to the market as honey, and we call on bee-keepers all over the world to try and stop such practices.

Bee-masters, whether in the British Isles, Australia, Canada, or the United States, cannot by any means take offence at our article, as persons carrying out the practices referred to cannot be called bee-keepers. Glucose has, without doubt, been palmed off on the public as honey. Bee-keepers all over the world have a common cause to see to,—the production of pure honey; and whenever we hear of anything injurious to the industry, it devolves on all periodicals devoted to the subject to bring such things to the notice of their readers.

On page 98 we reprinted the reproof of the editor as it appeared in the *American Bee Journal*, without comment on our part, and have made inquiries, and find that, so far as we can gather, all said in the article headed 'Facts' is true. The clergyman who supplied the information, and whose name for obvious reasons we withhold, is a well-known dignitary of the Church, whose word we cannot for a moment doubt. Whether he was a victim to a fraud we cannot say, but he further informs us:—'The farm I was on was fifteen miles from Kansas City. I do not remember the name, but there are plenty of them in the Western States.' Perhaps, this will give American bee-keepers a clue to the detection of those unprincipled adulterators who are doing so much harm to bee-keeping. Our article was based on the above information, and we also gave an extract from a magazine, *The Monthly Magazine of Pharmacy, Chemistry, and Medicine* for December last, part of which—'So much like the genuine article that only experts can detect the difference'—the *American Bee Journal* considers the *British Bee Journal* to have said, but which was only a portion of the quotation from the *Monthly Magazine*.

The *American Bee Journal* says, 'Its [the article's] only possible excuse is the infamous "scientific pleasantry," written, "for the fun of the thing," by Professor Wiley, who is so unprincipled as to let it "fly" on electric wires "to the uttermost parts of the earth" without a word of regret or denial.'

Naturally, subjects coming from a *Professor* would be considered facts, and we hope that our informant was deceived, although we must point out that there is a difference between 'artificial combs' as described by Professor Wiley, and which no bee-keeper for one moment would believe it possible to produce, and the productions of combs by feeding, which is not at all impossible, as every bee-keeper will know. As it has called forth attention in America, our object in stating what we did has been gained, and we hope that apiarians will not have such dangers to contend with.

Selected Query.

[3.]—*Will drones reared in one colony be admitted into another in the same apiary?*

Nearly always, until the general slaughter commences. While the massacre is going on drones shift their quarters constantly.—SAM. SIMMINS.

Yes; without a shadow of a doubt in queenless hives. —C. N. ABBOTT.

Yes, if the colony be queenless; otherwise, no, in my experience.—GEORGE RAYNOR.

Drones, from their perfect vision, are well certain of their own home. We have seen them alight at other hives on the return of a virgin queen, but they are not always accepted. When no stores are coming in, and the drones are driven forth by their own bees, the case is different; any queenless colony will then accept the wanderers if they seek admission.—JOHN H. HOWARD, *Holme, Peterborough.*

I think they will, especially in hives that are queenless. —JOHN WALTON.

I should presume not.—J. GARRATT.

When the honey-flow is abundant, drones appear to be unnoticed by the bees of another colony when they by accident or design (?) enter the wrong hive. I have noticed when making swarms, &c., that some of the drones have entered adjoining hives, and have not been unkindly treated. I have also put strange drones into hives, giving them admission under the back dummy, and these have been unmolested, but this amicableness on the part of the workers towards strange drones is variable.—S. J. BALDWIN.

Queenless colonies will occasionally allow drones from other hives to enter, especially late in the season when drones are turned out of hives that have fertile queens. —M. L. Gayton, *Much Hadham*

At times, not always.—John M. Hooker.

Yes; and at the time when they are being destroyed a queenless stock will form a refuge for all the drones in the neighbourhood.—J. A. Abbott.

[4.]—*Is it advisable to allow a queen to become more than two years old before replacing her with a young queen?*

Not as a rule.—Sam. Simmins.

Yes, if sufficiently productive, otherwise kill her at any age.—C. N. Abbott.

Yes, if she continue prolific, but, as a rule, queens decline in fecundity on reaching their third year, although there are numerous exceptions. Queens of good and prolific strain, bred in full colonies under the natural swarming impulse, enjoy greater longevity and retain fecundity, in my experience, longer than those raised on any other system. This remark applies to all races, but more especially is it true of the old English black bee.—George Raynor.

No; for no bees with us have given such results as colonies headed with a queen in her second year. We have, so far as time would permit, reared queens directly after the honey-flow each year, which here is all over by the second week in July. Our young queens are laying during August in time, with judicious rapid feeding, to enable us to get quickly into quarters well prepared for winter and the following season's work. Therefore we recommend, when working by storifying for comb or extracted honey, to have none but queens in their second year heading a colony.—John H. Howard, *Holme, Peterborough.*

I do not think it is advisable, though I sometimes keep some of my queens three or four years, except the bees replace them themselves.—John Walton.

Yes; for the same reason that I would permit a good laying hen to live longer than ordinary.—J. Garratt.

Although it is very generally agreed that a queen should not be depended upon after the second or third year, I have known queens to do remarkably well, even in the fourth year of their age. This is, however, I think, exceptional, as many queens in a well-conducted apiary, are thoroughly and completely exhausted by the end of their second year, so that the age of a queen should not alone be considered. It certainly will not pay to allow a queen to go on to the natural period of decay, or she may die at a time when she cannot be replaced, and the loss of the colony would follow. A queen is, of course, able to lay a certain number of eggs during her lifetime, but the bee-keeper may, by his management, determine how long it shall take to exhaust her powers, and therefore the amount of work accomplished by her, together with the possession of certain desirable qualities, both in the queen and her progeny, must guide one as to the advisability or otherwise of allowing a queen to become more than two years old before replacing her with a young one.—S. J. Baldwin.

Not as a rule. A queen is considered of most value in her second year, and, generally speaking, her powers begin to decline after that time, but I have had some most valuable queens three years old.—M. L. Gayton, *Much Hadham.*

Yes, if she shows no signs of failing powers. I would never supersede a queen, no matter how old, all the time she keeps the colony strong in bees and fills the frames with brood. Dealers in queens and queen-breeders will no doubt differ from me. 'Prolificness, not age, should be the test.' The bees will make fewer mistakes in this delicate matter of 'replacing' than we are likely to do. On referring to my letter in the *B.B.J.*, [399], June 24th, 1886, you will see that Professor Cook, Dadant, Demaree, Doolittle, Heddon, Hutchinson, Pond, and Boardman, hold these views in the *American Bee Journal* in answer to a precisely similar question.—John M. Hooker.

I would not destroy her till three years old, unless she showed signs of weakness.—J. A. Abbott.

A CHAT ABOUT NAILS.

The 'X-tractor' has told you about his attempt to 'smoke me out.' On the occasion of his visit we talked of 'nature,' as you have heard; we also talked of 'nail-makers' and *nails*. Poor Elihu Burritt and his fond dream of a universal brotherhood! who reads his book or heeds his pleadings for poor downtrodden humanity? But I remember how it fascinated me when it was first published.

I am of all men most unfortunate in the way of ink-slinging. In a moment of wild impulse I once wrote:—'Birmingham is the place to sell hardware.' A humorous old friend replied:—'Dear "A. E.,"—You hit the right *nail* on the head when you wrote that.' Being a dull hand at punning the incident had passed from my memory until recalled after the visit of the 'X' in a way that I now wish to explain.

I have often told you I delight in making my own appliances, consequently I use nails. When first I took to making section crates I used what are known as French wire nails (shown at Fig. 1). These are excel-

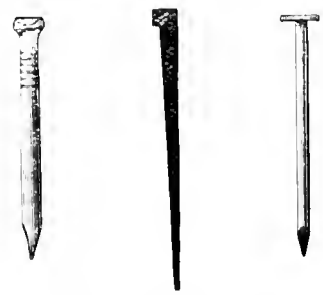

Fig. 1. Fig. 2. Fig. 3.

lent for driving, as they do not split the wood, and require no bradawl to prepare the way for them; but I found they have the serious fault of not holding the wood together firmly. My next resource was to return back to the old 'cut-brads,' shown at Fig. 2, but how slow was the process, and what a trial of patience! First to make a hole with an awl, then drive the nail, and finish off by driving it well down into the wood by the aid of a 'brad-punch.' But the work holds together firmly, as a reward for one's pains and patience; so I plodded on, patiently considering strength of work a sufficient reward for the tediousness of the operation. Presently I knocked a packing-case to pieces, and found it was held together by nails that were most provokingly obstinate (Fig. 3). They were oval in form, with a peculiar head, and remarkably tough, and, moreover, can be driven home without the aid of a bradawl, and will not split the wood. How I hunted the four corners of the enterprising town that comprises 'civilisation' to me! But 'oval wire brads' were unknown within its borders. In London, of course, I soon found them; I also found an enterprising appliance-manufacturer used them, but he did not name them as 'oval' as distinct from 'round' in his catalogue.

At last, as I have told you, came the 'X-tractor' and the talk about 'nature and nailmakers,' and in answer to my inquiry he told me oval wire nails were made in England, and were not imported from 'over the pond.' Here the matter, as far as we were concerned, seemed to

come to an end, but not so: a fortnight later I received a parcel by post that looked rather mysterious. I removed the twine and brown paper. Inside I discovered a stout bag labelled most ostentatiously thus:—

SILVER £10.
FROM
THE CHECKEM & CASHEM
BANKING COMPANY, LD.

Zounds! here is a joke!

'I see their knavery, this is to make an ass of me;
To catch me if they can.'

But no, it was a bag of 'oval wire brads' with 'X-tractor's' compliments. But I did not miss the chance. Not ten minutes previous Mrs. 'A. E.' had asked for the 'needful' to go shopping. So I neatly closed the bag, and turned it over to her. 'Ugh, I might have known you would not become so suddenly generous.'

Well, gentle readers, if you ever wish to use nails with comfort and expedition, I can recommend you these oval wire brads. Being slender there are a large number to a pound, and were they double the price, on the score of strength of work combined with pleasure in their use, they would be cheap.—AMATEUR EXPERT.*

LEICESTERSHIRE BEE-KEEPERS' ASSOCIATION.

The Committee met on the 25th ult., and made arrangements for some lectures and a conversatione. At the latter the Mayor of Leicester will preside.

Foreign.

SOUTH AMERICA.

A BEE HUNTER IN TROUBLE.

Being naturally very fond of bees, and having had my curiosity excited by what the natives told me regarding their indigenous races I made up my mind to bring together a collection of those to be found in Brazil. With this object in view, I let several of the people living near the forests know that I would repay them for their trouble if they would send me word whenever they came across a swarm in their neighbourhood.

I was not long in reaping the fruit of the offer I made them, for I was soon put in the way of making the acquaintance of these famous insects and of their abodes which in the generality of instances are the hollows of forest trees.

Early one morning while following my guide across woods through paths only partially trodden, I was so busy thinking of the approaching pleasure of adding other specimens of races to my collection, that I hardly paid any attention to what my guide was trying to explain of the sundry dodges they had to adopt in order to find their way through those parts of the country. I noticed, however, that from time to time he cut down branches of trees so that when returning he might recognise the ground we had gone over.

Having at last arrived before the hollow tree, and not wishing to let anyone interfere with my operation, I set to work, sawing and cutting the tree, while my companion left me in order to go about foraging for something to eat in the shape of game and so forth.

Having got my bees and comb safely secured in large jars with which I was provided, and seeing nothing of my guide I took up my load and made, as I thought, my way back. I was not long, however, in discovering that I had undertaken a more difficult task than I had anticipated, for in about ten minutes all traces of the path I was following had vanished, nor could I see any of the many branches which my guide had cut. My best course would no doubt have been that of returning the same way I had come, but somehow I thought I should do it quicker by taking a short cut. Unfortunately, whenever I thought I had a good path to guide me it always disappeared, and I could see nothing but cacti and other plants pointing thousands of their prickles towards me. There were nothing but obstacles in the way; sometimes it would be a cluster of shrubs into which it would have been dangerous to enter or else an impassable thickness of trees. One thing was, however, evident, viz., that the more I travelled the farther I was getting from my starting-point.

At the end of an hour or so of running about loaded with my bees, saw, axe, and other *impedimenta*, I began to feel not only fatigued, but also experienced great inconvenience through the strong smells which certain trees threw off during the hot part of the day. In fact I began to feel very anxious about the result of my excursion, and began to think seriously of the consequences which might follow from such a position as I was in. I tried not to think of these dangers, but rather how best I could overcome the difficulties with which I considered myself surrounded, when all at once I found myself in front of—what would you imagine? The very tree I had cut down an hour or so before in order to extract from it my bees. Never was I more surprised, and it was with difficulty that I could believe my eyes. How is this? said I to myself. I have been travelling fast for the last hour, and now I find myself where I started from. Again I began to reflect on the situation I was in. The prospect of having to wait, perhaps indefinitely, for my guide in the midst of such surroundings was certainly anything but encouraging. However, when I was on the point of making a fresh start this time in another direction, I had the agreeable surprise at hearing at a distance my guide's voice. You can easily imagine how pleased I was to see once more my companion, particularly in view of the fact that a few minutes longer and I would have set out in some other wrong direction. Be this as it may, we were not long in finding ourselves out of the wood, and where we found that the breakfast the guide had prepared was ready for us.

As for the bees, every possible care was taken of them, and before the day was over I had them safely placed in a glass case in which they appeared to feel quite at home, and I trust that they will repay me for all the trouble I have taken of them by imparting to me some of their secrets.—E. BLONDET. *Barra* (*Brazil*), *December* 28 1887. (*Apiculteur of Paris.*)

ANCIENT BEE-KEEPERS.—The following reference to Westbury, Wiltshire, is translated from *Domesday Book* (1083):—'The king holds Westberie; Queen Editha held it, and it paid geld for forty hides. The land is forty-seven caracates. In demesne are seventeen hides, and there are seven caracates, twenty-eight serfs, and sixteen coliberts. There are thirty-eight villaus, twenty-three borderers, and nine bee-keepers.'

HOGE'S HONEY COMPANY.—I note in answer to correspondence in *Bee Journal* of the 16th inst., that allusion is made to the above Company, the question arising as to what has become of them. A short time since (three weeks) I saw the following paragraph in a trade journal, 'A curiosity in bankruptcy is a *first* and *final* dividend of ·65 of a penny, which has just been announced by circular to the creditors of Hoge's Honey Company. Final dividends of a fractional amount have been frequently known, but a first and final amount equal to only 2*l.* 14*s.* 2*d.* in 1000*l.*, is decidedly wonderful.' The above speaks for itself.—W. B. WEBSTER.

* Since the above was written Messrs. Abbott have advertised the nails alluded to in the *Journal*. You will kindly understand this is not 'grinding an axe' for our versatile friend; he does not sell nails, so kindly do not apply, but it was refreshing to me to learn that such a good thing did not come from 'over the pond.'—A. E.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.*' *All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts* (*see* 2*nd page of Advertisements*).

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

ADULTERATED HONEY.

[1517.] In the Report of the New York Bee-keepers' Convention, held at Utica, 'An extract from the *American Grocer* was read, in which it was stated that in New Jersey forty-two samples of bottled honey were analysed, and it was ascertained that out of thirty-one samples put up by packing houses, only six were pure. The samples purchased of farmers, however, were all pure.

'Mr. Root said, "I fear there is a mistake about some of those samples examined. The State Chemist of Ohio says that it is a difficult matter to tell where honey is adulterated. Bees gather every variety of honey."

'Mr. Aspinwall said, "With the polariscope you can detect the presence of five per cent of glucose. A point in the article just read is, that the honey procured of dealers was nearly all found to be adulterated, while that purchased of bee-keepers was *all* pure. There is a law against adulterating honey, and can we not induce the State chemist to analyse honey sold on the market?"'

It is only right that it should be well known by all in England that American dealers continue to put up adulterated honey for market, and that the only way to obtain pure honey is by importing direct from the producer, and save the profits of the dealers and middle-men, or to purchase such only, whether English or not, that bears a warranty of purity on the label. I am afraid Mr. Hoge's experiences have not deterred others.—JOHN M. HOOKER, 76 *Tyrwhitt Road, St. John's, S.E., March 5th.*

THE NEW MONTHLY *JOURNAL.*

[1518.] The first number of the *British Bee-keepers' Adviser* has come to hand, and although it contains nothing that is not to be found in the weekly *B. B. J.* yet I hail it with feelings of pleasure and satisfaction. I have been wanting to see a journal that the cottager could afford to buy and keep in his own possession, so that he could con over its contents evening by evening by his own fireside, and read and re-read its pages over and over again, until he had mastered the facts that so many pages of printed matter have to speak about.

The circulation of the *B. B. J.* amongst members of County Associations was a good thing in its way, but it was, and is often, very aggravating to people of limited acquaintance with literary learning. The hackneyed expression of 'limited education' I purposely avoid, because it is erroneous. Put clerks to care for sheep, and how about their education? or take book-worms, and set them to plough land, and 'Hodge' would soon get the laugh of them; and so on all round society. That assembly of 'the first gentlemen in Europe' would fare rather badly if transported to a desert island and left to their own resources. We have all some kind of 'education,' even if we cannot distinguish a great A from a duck's track. This is digression. Two evenings after supper is not sufficient time for a cottager to master the contents of the *Journal*, especially if he has to be in bed in time to give his body sufficient rest to enable him to be out again at 5 A.M., consequently I have always advocated a cheap journal that all could buy and keep by them. I have a letter I value greatly, written only a few days before the lamented death of Mr. Peel, wherein he expressed a hope 'to be able to arrange it very soon.' The good time has come at last, but it has been the work of others to bring it about.

Many would have wished to see the *B. B. J.* reduced to a penny per week, but that would entail a serious loss, and after due reflection I feel certain of the wisdom of the present arrangement. We sometimes complain about our *Journal* when full of reports of Associations, &c., but remembering its position as the organ of the B. B. K. A., as well as an exponent of practical and scientific bee-keeping, I fail to see where an alteration could be made that would be an improvement.

Unlike bee-keeping in other countries, in this kingdom it stands on a philanthropic and scientific, as well as a commercial basis. Hundreds of subscribers to our Association and its affiliated branches only do so on the two first of the three considerations enumerated above. While that is so the *B. B. J.* must cater for these two aspects of apiculture equally as much as for honey-getters. Having no knowledge of foreign languages, I can only speak personally of those published in the English language: and after seeing most, if not all, of the trans-Atlantic bee-papers, I am sure we may all be proud of *our Journal* as standing second to none. Across the Atlantic the complaint is that the 'honey-growers' get too much attention; with us it frequently is the reverse, but our new *Journal* will obviate this. The cottager has now an '*Adviser*' that is all 'advice.' My only fear is that he does not find it too dry reading. Cannot arrangements be made that county Secretaries may get local matter printed on one of the fly-sheets at a little cost on the model of the various parish magazines?

In a private communication to myself, Mr. Cowan, the esteemed editor and proprietor, told me of his decision to publish the *Adviser* on March 1st, adding it was his wish that the cottager should make it purely his own journal, writing his thoughts in his own language, and never fearing if the ideas were put in language not grammatical or badly spelt—the sub-editor would correct all that. But if the working bee-keepers of England, Scotland, and Ireland, did not get well served, it should be no fault of his, as he (Mr. Cowan) was prepared to make it whatever they chose (except a bear-garden of course, although he did not say so).

I have been induced to make these remarks that all may feel perfect freedom in getting as much benefit as possible from the new *Journal*; as well as in fairness to Mr. Cowan, whose only desire in this new venture is to advance bee-keeping as a healthy and profitable pursuit, which he, equally with myself, feels is calculated, especially amongst the rural population, to be a counter influence to the beer-shop. May he not be disappointed is the earnest desire of—AMATEUR EXPERT.

IN THE HUT.

'About his shelves,
A beggarly account of empty boxes.'
Romeo and Juliet.

[1519.] Empty feeders, sections, and hives on all sides, waiting for spring. This is just the time to prepare for the season which will soon be on us at a bound. Nailing frames together, painting spare hives, and fitting foundation into sections, should be no longer delayed now the evenings are long, for, in another fortnight or so, all our leisure time will be filled up by spring examinations should the thermometer give us 50° to 60° in the shade at noon.

An opportunity like this, a fortnight ago, enabled a Huttite to examine a dozen hives. In all but one there was plenty of sealed brood, and young bees were seen

emerging from their cells. (These young bees, I fear, will come badly off in the present 'blizzard.' To parody Mark Twain, I don't know exactly what a 'blizzard' is, but *that's what this storm is.*) Where the bees seemed to need it, a frame of food was removed from the back, quite to the side of the brood-nest. This was done with little or no disturbance, and, of course, without smoke. Had the warm weather continued, empty combs would have been removed, and the hives contracted by the dummy. Here, in the garden of the Hut, I am on principle leaving hives *severely alone*, until, say, the middle of March. At times I am sorely tempted to examine the contents of a thin-walled hive, which loses a hundred or so bees, dropped off the combs every time we have a cold snap. They are wintered under American cloth, shiny side down, plenty of quilts, doorway left full width and shaded from sun when snow is on the ground. Live or die, I shall not disturb them yet, for bitter experience has taught me that more harm results from early meddling than from a policy of '*laissez aller*,' in spite of the forenamed successful examination.

'Malta' (1494) fancies orange-blossom and karob-bloom make his less vicious. This is fact. If he will experiment with a piece of orange or lemon peel, or go (or, worse still, allow the children to play) near hives after eating oranges, he will be confirmed in his opinion. The stigma of orange-blossom (part of the future fruit) smells exactly like the essential flavour secreted in the cells of the ripe fruit rind. With us, the smell and taste of heather nectar make docile bees veritable demons; they positively hiss at us; and a fox-terrier puppy, brought one Sabbath morn to look at our hives on the moors, knows this now. His owner put a veil on himself, but in a few minutes a disconsolate man, with a much bee-stung dog under his arm, was seen wending his way homewards, for the dog was well-bred, and much prized withal.

The karob (carob, karoub) is only known in this country by its fruit, the locust-bean, or St. John's bread, erroneously supposed to have been, along with wild honey, the food of St. John Baptist in the wilderness. The seed of the carob (*Ceratonia Siliqua*) is said to have originated the jeweller's carat weight. I can well imagine the peculiar smell of carob, a sickly sweet, being irritating to bees.

The Coming Bee. When the specialist requires to impart the qualities of any particular variety to what we may call his stock strain, a short way to do this would be by working a virgin queen for his drones.

The following is a good linctus for cough, sore throat, &c.:—Add to the juice of a lemon the same quantity of honey. A sip occasionally. Some would prefer equal quantities of whisky, or rum, and honey; whilst others, oh, shade of Sir Wilfrid! might prefer a wine-glassful of Athol brose, the recipe for which I got near Blair Athol:—Equal parts of Scotch whisky, honey, and cream, The scarcity of cream may act as a check upon the consumption of this 'awfu' guid' mixture. Speaking of consumption, I can fancy nothing better for the early (aye, and later) stages of this disease than a tablespoonful of Athol brose first thing in the morning. Ask your doctor about it, for the profession are recommending again the old-fashioned dose of rum and honey.—X-Tractor.

VIRGIN QUEENS.—CONSANGUINITY.

[1520.] It has given me a considerable amount of gratification to find that the above subject, which was introduced into these columns simultaneously by the writer of 'Useful Hints' and myself, has elicited some amount of discussion from one or two readers of this *Journal*, who, as a rule, I think, hide their knowledge just a little too much under a bushel. I must also thank those bee-keepers who have written me privately, in each case falling into my views.

In my last communication, I observed that the above subject was well worthy the consideration of every apiarist, and I think there are but few advanced bee-keepers who would gainsay this assertion; but those who differ from any of the arguments or theories would do well to exercise just a little charity. No new theory can be advanced but that there are some who impute motives to the advancers. Perhaps, it would be as well if such writers would hang in a conspicuous position over their desks that salutary proverb, 'Those who in amicable controversy impute ulterior motives to their adversaries neglect the first laws of friendly discussion.' I find that a knowledge of this often tones down what otherwise might be a slight slip over the boundary which separates the kindly spirit from that of uncharitableness.

I have to thank Mr. Sharpe for his kindly remarks upon these articles, and with him agree that the introduction of virgin queens promiscuously into an apiary is not the right way of producing the 'coming bee.' But where is it? Has it come? When is it coming? The production of this *rara avis* (*apis*) is yet to be accomplished. It has puzzled for some years the queen-rearers of America, where queen-rearing has become a business of a magnitude hardly credible to the uninitiated. What are we to do in the interim before the advent of this phenomenon? The production of this will have to be left to the specialist, and while he is busily engaged in producing this prodigy, let us obtain the best results from the materials now laid before us. Let us study how to obtain the best results at a minimum of cost. Even if we increase the yield of one colony by half a pound of honey we have attained a success; we have succeeded in producing that which otherwise would have been lost to us.

In reply to Mr. Sharpe's query. It is absolutely imperative in order to be quite certain of the true fertilisation of every queen, no drones of another variety must be allowed to fly from a hive even more than two miles away; at this distance cross-fertilisation will frequently take place. The Kohler method is the only one where, in an apiary surrounded by other hives, true fertilisation can be accomplished with anything like a certainty. Of course if you have queens and drones before any one else in the neighbourhood has reared drones you will obtain the desired result.

I will now proceed to answer the letter of Mr. W. Woodley. In the first paragraph he calls attention to the qualities of the English nation as eaters of boot-uppers when pressed with hunger, of their prowess, of their endurance, and, I may add, of their indomitable perseverance and pluck! Yes, all this I own, but did it never strike Mr. Woodley that the Englishman of the present day is *not* a true descendant of the Ancient Britons but a mongrel? (Patriots, spare the simile.) To form the Englishman, Saxons, Norsemen, Normans, Romans, &c., have been called into requisition, and so have produced the Englishman with his superlative gifts. (Excuse this patriotism.) I say most emphatically that bees when crossed with some selected foreign variety (Italian) are considerably improved in their honey-gathering qualities, and I challenge any reader after examining the numbers of tabulated records of honey yields in this *Journal* to prove the contrary. I exclude all apiaries above 54° north latitude. Is Mr. Woodley's experience of crossing his bees with Ligurians so extensive that makes him so positive? Methinks I have heard him say that his bees should never be crossed with other varieties if he could help it; this occurred some few years ago, and I know he very recently expressed the same opinion.

By Mr. W.'s arguments he would wish one to assume that there is no such condition of things as consanguinity, and that if so it has no perceptible effect upon the offspring. I am glad that its effects have never been presented to

his eyesight. I can look around and see its effects in all directions where living things have been brought within its influence.

We do not live in a state of nature. Our cultivated beasts and birds do not live in a state of nature. Our plants are the same, and so are our bees. Man has moulded them to his wishes, or gathered them together in abnormal quantities, thus bringing them to a condition that they may be of greater use and service to him. I ask the questions, Would they have been of such utility to him if he had allowed them to take their own course and live in a state of nature? Would our cows, our sheep, our fowls, our bees, our trees, bushes, and plants produce what they do if they had been allowed to revel in a state of nature? How have they been improved? Has no foreign variety been imported to improve their condition? Has no foreign variety of tree or plant been imported to improve and has improved our own? How have our fine-wooled sheep been produced? How our fleet horses? How our large egg-producing fowls? How our luscious fruit? Should we be satisfied now with the crab-apple, the wild pear, the wild cherry, or wild strawberry and raspberry? In improvements pleasing to the eye, How have our fancy pigeons been produced? How our useful or pretty dogs, cats, rabbits? Why, each and all of these have been produced by a judicious crossing of varieties—in every case of foreign varieties. Why, then, should not we do the same with our bees? Are we to remain *in statu quo*, and thus rest satisfied with what they *have* produced, or are we to advance as other stock-keepers have advanced before us, and endeavour to improve the present stocks? Nature is sufficiently plastic that it can be moulded into almost any form. An all-wise Providence has planted reasoning power in man's brain giving him the faculty to mould His gifts to any shape better suited to man's purposes.

In the third paragraph of Mr. Woodley's letter, he writes, 'May I ask whence Mr. Webster gets his deductions that man begins to succumb to the baleful effects of consanguinity in the second generation?' I have so asserted it, and will go further by telling him that such commences to take place directly the influence is brought to bear upon the subject, though perhaps not apparent to a superficial observer. I cannot find time to hunt up all authorities, but from Aristotle to the last work on physiology may be cited as authorities in support of this fact—*quod semper, quod ubique, quod ab omnibus, ipse dixit*.

I observed in my article that total annihilation of a colony of bees by consanguinity could not possibly take place in England; quoting my first article, 'In what county in England can we go at the present time where it can be guaranteed that there are not colonies of bees within two or three miles of any position we like to take in that county? I venture to say there is not one.' Did Mr. Woodley examine the roofs, chimneys, and walls, of all houses, cottages, barns, and other outhouses, or all hollow trees within six miles each way of the cottagers' houses where the bees were kept, in order to satisfy himself of a definite case of consanguinity? Because if he did not the example is of no use, it collapses and falls to the ground. At this time of the year such an examination for vagrant stocks would be impossible, so that it must collapse. Will he assert that no absconding swarm has come nearer than six miles of these cottages during the last three generations, which, computing at thirty years for each, would make ninety years?

By what means does a cottager not conversant with the physiology of the bee deduce his theory (it must be very much of a theory) that it is the same strain quite untainted with any other that he has possession of now? Can he follow the mating of all his queens for ninety years? Impossible. In point of fact, the average cottager knows nothing at all about it, and even the majority of enlightened bee-keepers have only become somewhat educated upon this subject during the last decade. In my example the stocks had gradually lost their prolificness; there was no disease; no other cause discoverable; therefore, as most of us know what consanguinity will produce, I, as any reasonable person would do under a similar circumstance, laid the damage at the door of it, especially as the surrounding country favoured such an idea. If the stocks had been in a flourishing condition I should have *known* that successive cases of consanguinity had not taken place.

Deterioration of colonies will be the result of in-and-in breeding; therefore let us remove all chances of such taking place, bearing in mind the fact that cross-bred stock, be it animal or vegetable, is in all cases constitutionally stronger than pedigree stock where the latter, as is usually the case, has been in-bred.

'A Cottage Amateur' has never tried keeping a frame of eggs away from a stock for forty-eight hours, even in a July temperature, or he would know that it would be equivalent to keeping a hen off her eggs for forty-eight hours and then expect them to hatch.—W. B. Webster.

MALAGASY HONEY-BEE.

[1521.] I do not know if it will interest any of your readers to have a few notes taken by me on the Malagasy honey-bee (*Apis unicolor*). I have now kept this bee for a short time. My first two swarms proved queenless, and as I had no means of supplying them with a new queen, or young brood, it is needless to say I lost them. They, however, taught me that fertile workers are not uncommon in this bee, and that they behave in the same way as queenless hives of *Apis communis*, building drone-comb, keeping their drones, &c. They at last were found out by the wild bees in a wood at least three miles distant, and robbed mercilessly. This shows that they wander a long way in search of food; in fact, when one looks at the country round about, so bleak and bare, only one or two small woods and absolute desert in between, one cannot help wondering from where the honey comes. Even in the forest, their natural abode, flowers are very scarce indeed; but I suppose the tropical flowers yield more honey. Some people have an idea that a tropical forest is a mass of strong-scented flowers, but one may go miles and miles without seeing even one flower; what there are, however, are most beautiful.

The bees when robbed fought well, and although daily growing weaker defended themselves to the end, fighting manfully, but of course to no purpose; the wax-moth finished off what the robbers left, and that was the end of my first two attempts. The next swarm I managed to obtain was in an earthen pot, it had to be brought a long day's journey slung on a pole between two men, but I would not have it moved till there was young brood, and so being sure of a queen, and, if she were killed in the moving, of means of replacing her. They arrived in a wretched condition, very many killed and some of the combs fallen in, but they set to work at once and soon put all right, and in a day or two I had proof of the queen's survival. This encouraged me to move a second and stronger lot, also in an earthen pot. I was not so successful, however, for the men sent to fetch it carried it upside down, and when it arrived the pot, too, was broken, the dead bees lying in masses, and the combs all fallen but two. I placed the hive and mended the holes with clay.

For the first week they did nothing, or little, but put it straight, carrying out the dead, and building new combs from the spilt honey. A week afterwards I removed the remnants of broken comb; and in another week they had built five new combs, varying from a foot to six inches in length. How the queen survived I cannot imagine. The queen must be a very prolific one, as I moved three of the largest brood-combs that were not

much injured into another weak hive, but notwithstanding they picked up their numbers very quickly. I have not yet moved them into bar-frame hives, but left them in the pots until next spring, when I shall move them. These pots are of rough earthenware of about one foot and a half in diameter, and nearly spherical, with wide lips turned back. Over the mouth they place a clay cooking-pot with holes bored in the bottom and the edges plastered with cow-dung. This is not the most common hive, which is a hollow tree trunk with a block at each end. These latter are more easily manipulated, as by blowing smoke in at one end you can drive the bees to the other and cut the combs. The natives near the forest have a fair knowledge of bees, but how much they understand of the habits of the queen I do not yet know, but as I shall soon be visiting the forest I mean to find out their way of bee-keeping. I should have done this sooner only I am some way from any bee-keeping village, and on my last visit I could not speak the language sufficiently well for the purpose. They smoke their bees when they take the combs, but only slightly, and never kill any if they can help it; and as they always take the nearest combs to each end of the trunk they seldom destroy much brood. Their time for taking the honey is in early spring, so that the bees may have sufficient in winter, and they know how to make an artificial swarm, and being great cheats they usually sell such queenless, so as not to spoil trade. Natives away from the forest know nothing about them, and are consequently taken in.

I think I mentioned in my last letter that the wild bee often builds its combs exposed. I have seen one like that, but I believe if they can find a cover they invariably prefer it. Rocks are a favourite resort. On the coast, where the natives bury their dead in wooden coffins exposed to the air, the bees often take possession. On one occasion a part of the coffin had fallen in, and the combs might easily be seen filling the ribs; and, by the way, the bees were entering the skull; I expect it was used as a 'super.' Nothing could be better than ribs for a ready-made foundation. These, of course, were the wild bees, and the natives, I have been told, do not like the honey, but sell it at a distance.

It is a curious fact that my bees refuse all the flowers in my garden. Most are European flowers, and almost all unindigenous, but one would suppose such flowers as beans, verbena, maurandia, different kinds of jasmine, when growing close to the hive, would be at least once visited, but they go straight away a long way off; where I do not know, unless it is to the wood mentioned above. However, wherever it is, there is a great deal of honey, as the flow never seems to lessen. I have often counted the bees leaving the hive, and the average in the middle of the day is eighty per minute leaving, and, of course, as many entering; and, as far as I at present know, they are away from quarter of an hour to five-and-twenty minutes, but I cannot state this for certain until I have made further observations.

How the Malagasy bee would succeed in England I cannot say, but as far as I at present know it is prolific, hardy, bold, and very quiet, allowing itself to be freely handled even by strangers, and seldom stings.—C. P. Cory, *St. Paul's College, Ambaloharanana, Madagascar, January 23rd.*

GRANULATED HONEY: IS IT SUITABLE FOOD FOR BEES?

[1522.] I beg to say I keep a few stocks of bees, and am fond of them, and try to study their welfare. I am a reader about bees, and get your *Journal* for my guide to their management, and generally I find what I want in the way of advice. Now I have some comb honey which has become candied, and I had thought of feeding my bees with it, to save trouble and expense of making food specially; but I was a bit bothered and felt sorry when I read in 'Useful Hints' on page 60 in February 2 *Journal*: 'Then comes the question, Is granulated honey suitable food for bees? The answer must be, No.' Now in *Journal* for February 23, page 109, in answer to 'D. M.' I read, 'You are not of opinion that candied or granulated honey is injurious to bees;' with these two such opposite statements before me I am more bothered than before, not knowing which to take as the safest and best. I should be glad if you will give space for this in your next issue, it might be the means of bringing out the opinions of other leading bee-keepers who may have had experience in the use of candied or granulated honey for feeding bees, and so assist those in doubt, as also yours,—Inquirer.

[The paragraph to which you refer in 'Useful Hints' has reference to 'cold slabs' of hard granulated honey in the outside combs of a hive, of which the bees can make no use and which we advised should be removed. On such combs, as we stated, we have often known bees to perish, from inability to assimilate such food. Moreover, we have often known bees to take dysentery from feeding on partially granulated comb honey, the liquid portion having become acid, as often is the case. When honey is extracted, and granulates a few days afterwards in the jars, from the air introduced in the process of extraction, there can be no doubt that such honey, when reduced to fluidity, is the best of food for bees. But it is very different from the granulated honey of which we spoke in the passage to which you refer. We shall be glad if our readers will give their views on this point.—Editor of 'Useful Hints.']

PAINTING THE INSIDE OF HIVES.

[1523.] Last year I painted the inside of one of my hives, after reading Mr. Lett's letter. The first difference I noticed was in scraping the floor-board in the autumn; it was so dry and clean, and was so easy to scrape. I wintered the hive with an unmelled quilt, leaving no ante-room between the front dummy and front of hive, but putting between them a frame filled with cork-dust. I did this because I feared the very thing that happened to Mr. Adcock's hives, viz., that the ante-room would become cold, as the bees could not keep it warm, and consequently, on a sudden rise of temperature the moisture would condense in it.

My hive kept perfectly dry through the winter until about the 12th ultimo, when I noticed a pool of water under the front dummies, at the east side of the entrance —*i.e.*, at the side at which the warm air escapes from the hive. The weather was then frosty, with N.E. wind. I think it was owing to breeding going on in the hive, and the entrance having been left the full width of about eight inches, instead of being reduced in February, as advised by Mr. Simmins.

I took out the water with blotting-paper, raised the hive a little more at the back, and closed the entrance to two and a half inches. The reduced entrance has since been only slightly damp though, but there is still a little wet behind the door slides. When I reduced the entrance I put in a stick to rake out dead bees, but only found one. I also did this several times during the winter, but altogether I have not found more than six dead bees, which I attribute principally to having packed the floor-board with cork-dust. Surely bees must get chilled on a thin floor-board mounted on legs from the cold striking through it. If the hive is without legs, the ground, of course, keeps the floor-board warm.

I was very much interested in Mr. Adcock's letter, as it is strictly in accordance with what I said in writing on 'Upward Ventilation' in the *Journal* of 1886, p. 179.

I gave the bees a sugar-cake to-day over the feed-hole, and I saw no signs of damp.—T. F. L., *March 4th.*

RAILWAY RATES.

[1524.] Who amongst bee-keepers but is aware how heavily the railway rates for honey have told somewhat to the detriment of the industry? Under most circumstances honey, whether extracted or in comb, has been charged by the various railways under Class IV., as the wording of their classification was somewhat as follows: Honey in tins packed in wooden cases to be charged under Class III. Honey in jars or otherwise packed, Class IV.

I have for some time past been trying to get the rates lowered, and have explained to the different officials that extracted honey packed in strong cans should invariably come under Class III. Bee-keepers will, I doubt not, be glad to hear the result of my endeavours.

The G. W. R. last month issued a memorandum to all their stations, that, in future, honey in bottles packed in boxes and sections sent in spring crates to be charged by goods train under Class III. And further, they have under consideration the idea of allowing extracted honey in cans to come under Class II. (the rate charged for milk in cans); and I have every hope of this being acceded to ere the honey season commences. They propose to bring the subject under the notice of the goods managers of other lines in connexion with the G. W. R. But in order to be successful, I must have the assistance of others applying to their respective lines; and I feel confident, with a little perseverance, we shall obtain our wish.

Bee-keepers, who have been sending away large quantities of honey, I ask to keep the ball rolling in their various districts, and in a short time apiarians throughout the British Isles will be able to reap the same benefits.—Wm. N. Griffin.

REMINISCENCES OF AN UNCERTIFICATED BEE-KEEPER.

[1525.] In the year 1870 I first had my attention called to bee-keeping, and I have not forgotten that time and the many muddles I got into. My employer had a few bar-frame hives, also a few skeps, given him by his brother with other bee-furniture. Now neither he nor I understood bees, but after reading a little and asking a few questions we commenced to do our best. We thought it would be desirable to get a straw skeppist to give us a lesson on hiving. We had not to wait long before out came a swarm, which settled on the end of a high tree. Of course, as in duty bound, I rang them with door-key and shovel. When the bees settled I went for my friend to hive them for us, but he being from home I had to return without him. I just arrived in time to see the swarm take wing across a red-clover field. We followed them all the time sounding the timbrel, but I found, charm I never so wisely, that they would not settle, and they were soon lost to my sight. After this I determined to try to hive the next swarm myself. I had not long to wait before out came another lot, which settled up in a yew-tree. I donned the bee-dress, a thing like a sack with sleeves in a piece of gauze that covered the eyes. I now, armed in my coat of mail, hailed a man in a field close by, of whom I was told that either his mother or grandmother did keep or had kept bees. So, of course, I expected him to know something about the process. Well, he pronounced me all right. So I mounted the ladder, skep in hand. I commenced to shake the tree and the bees all over myself and the skep; and didn't I shake too, expecting every minute to be stung! But by some means I undoubtedly got the queen, for in a very short time all were safe. This lot I did not ring, as I could not see the reason of it, but a friend of mine took me to task over this. He maintained the bees had a certain music of their own, and the ringing caused certain vibrations in the air and confused the bees and made them settle. He said he had a gong made for the purpose of ringing down his bees.

Well, the time came to take the honey, so my employer and I held a council of war as to how we were to proceed. We had read about smoke, but how it was to be applied we knew not. However, we rolled up some brown paper like a huge cigar, lighted it, and attempted to blow in the smoke between the hive and the super, after raising the super with a screw-driver; but I don't think we got a whiff into the hive. Then and there they commenced a fierce battle. One bee landed a sting on the bridge of my nose. I retired, and on looking up saw my employer in full retreat with the enemy furiously pursuing with fixed bayonets. He pulled off his coat and cut some curious capers; he was soon lost to my sight. I made my way round to the kitchen. I was told that salad-oil, vinegar and soda, also the blue-bag, were all good things. I tried the lot, but my poor face enlarged so that I looked as though I had neuralgia; and what with blue and oil I had a very comical appearance, but in the morning my appearance was that of a fat pig.

Oh, if that cook had let things alone we might have been saved a deal of trouble, as it appears that amongst the gifts of my employer's brother was a smoker, one of those you blow with your mouth, until your lips are very much swollen, and eyes the appearance of your having ophthalmia. This article the cook claimed as having some connexion with a sausage-machine. Five or six years after when lighting my new smoker she told me she had a thing like that in the kitchen, but she could never make it do its work properly, so she had to put it aside. This I examined, and found the name of 'George Neighbour & Sons' on it.

After this I read everything I could about bees, Langstroth amongst the rest. Thinking I knew something about bees more than I did previously, I volunteered to drive some for a friend. He thought very highly of my abilities. I, armed with my smoker and veil, went to work. After I had given a few whiffs to the bees I turned them up, carried them on to a gravel path (my friend the meantime standing behind a bush). After pinning on my top hive (for open driving) I commenced to drum and the bees to sting. Now I had on a very thin pair of trousers, and, stooping down, gave the bees a fine chance to sting my legs, and stung they did, but I didn't tell my friend, or he might have thought less of my abilities. After this I thought over the matter to see where I was wrong, and soon succeeded beyond my expectation.

About this time a certain County Association held its show. This nearly sent some of my neighbours off their heads. What with 2*s.* 6*d.* a lb. for honey, and one hive yielding 90 to 100 lbs., as the man in the bee tent told them, set everyone on fire, and I, too, caught the fever. Every night after a hard day's work I went to some meeting, to the loss and neglect of my own bees. One of my new pupils, seeing how much my time was occupied, thought he would try and manipulate himself. He had seen me use my pipe to smoke his bees, and he thought he could do the same. He had been a non-smoker, and his system not being charged with the narcotic, told on his brain. He had to leave the hive as it was, but before he could get far he reeled, and the ground met him before he thought of it. He again tried to walk, and managed to get into the greenhouse and lay on the stage. A friend just dropped in, and with a great deal of telling believed his story at last. (This was rather a curious predicament, for being a total abstainer his friend seemed to doubt his word.)

I now gave lessons to a clergyman. He, of course, took to it quickly, and thought he knew all about it, so he found amongst his flock an old straw-skeppist, a regular brimstoner, whom he persuaded to let him drive his bees. The night being fixed, we went. He was boiling

over with enthusiasm. The old man said he knew he could not do it. It was no use me trying to tell his reverence anything, so to work he went, and before he was ready first his veil was badly fitted, then honey all sealed over bees had not time to gorge before he turned up the hive, and the bees went at him left and right. Now see his reverence cut some capers, first under this bush, now under that; at last he made across the old man's potatoes, over the carrot-bed, through the pea-row, over the gooseberry-bushes, round the house, the old man chuckling, 'They've got ye, they've got ye! I told you he could not do it.' And I still remain—

UNCERTIFICATED.

NOTES ON BEE-HIVES.—SECTIONS.

[1526.] I was very much surprised to read the letter to Mr. Chambers (1468), for I, too, have been experimenting with a grooved section, but not with the same object; my object being to gain time. I found it rather awkward at first to slide the foundation in while folding the section, but having made a wooden block for this purpose I found it the most expeditious way of preparing sections for the crate. The sections are always true, the foundation always firm, and the process is simplicity itself.

I have enclosed a sketch showing how the section is pushed into the grooves, and how (both hands being free) the foundation is placed in the grooves of the section.

The plan of the block (which is screwed to the bench or table) is thus—

Half full size plan.

I use $4\frac{1}{4}'' \times 4\frac{1}{4}'' \times 2''$ sections, and cut the foundation exactly $\frac{1}{8}''$ larger than the inside measurement, having a zinc template for this purpose.

I hope there are no patent rights here involved. I have no recollection of seeing anything of the kind before, but as I get many ideas from the *Journal* I venture to give this in the hope that it may lead to improvements in the system.—THOS. F. WARD.

CROSS BEARINGS FOR SKEP HIVES.

[1527.] As supports for the comb in skep hives I would suggest that smooth round rods of some strong durable timber, such as oak, teak, or ebony, might be used; one end being allowed to project a little outside the hive, the interior portion to pass through as many short uniform lengths of hollow cane or elder as will cover the entire length from one side of the hive to the other.

The object of the loose covering being to prevent any attachment by the bees, so that when any one wishes to remove the combs they would be able to withdraw the rods from the outside and take out the combs one at a time unbroken; and a skilful operator would probably be able to leave the brood-combs in the hive uninjured, and replace the rods and ferrules and return the bees to the hive.

And if no objection could be found against steel skewers on account of loose specks of rust soiling the combs during the process of removal, or on account of their injuriously affecting the temperature of the hive, they would be more convenient for the purpose than wood, the interior portion being, of course, covered with loose ferrules as stated.

This is a recent idea that I have not yet myself tried, and simply offer it for the consideration of bee-keepers, with the hope that they will be able to work it out to their mutual advantage.—S. C. K.

ON THE FIRST FLIGHT OF BEES IN SPRING.

[*From the German of* ADALBERT BRAUN.]

Hark! what is so gaily humming
In the little garden there?
Hark! what is so briskly whizzing
Through the still and silent air?
Friend, it is our bees—the darlings—
Now enliven'd by the spring:
Yes, the winter is departed,
And once more they're on the wing.
Happy he, who winter's perils
All his stocks brings safely through;
Thank Him, of all good the Giver—
Faithful Watchman He, and true.
Of my own are none departed,
All as yet unhurt remain;
Though no longer rich in honey,
Yet is spring returned again!
Come, and let us view them nearer—
Enter by the garden gate;—
So—stand still and watch their doings
Light your pipe, and patient wait.
See how busily they traverse
To their pasturage and back,
That they may by toil unwearied
Save the commonwealth from wreck.
Look, oh look, what loads of pollen,
Bring they in with heedful care.
Nurslings, fear not; for your cravings
Here's sufficient and to spare.
How they dart and how they hurtle
Through the genial balmy air!
To the mountains—to the meadows—
'Tis the scent attracts them there!
There they dexterously rifle
Nectar from each flower in bloom.
Toil they for our honey harvest,
For us fill the honey-room.
Yes, our bees, our darling darlings,
We salute you all to-day;
For your life is our enjoyment—
Winter's sleep has passed away.
Grant prosperity, O Heaven!
To the new-born honey-year—
Give Thy favour—give Thy blessing—
To these objects of our care.
Now let each attentive guardian
In devoted service strive
For the proud, the matron-monarch—
Sovereign of the honey-bee.
So that we may learn by watching
Who that in the noon-tide glance;
Or in midnight's darkest moments,
Summon her to Hymen's dance.*
Ev'ry bee-hive calls for patience,
Whilst great HALLER'S lessons teach
Without patience Nature's secrets
None successfully can reach.

—T. W. WOODBURY, *Mount Radford, Exeter.* (1862.)

Echoes from the Hives.

Honey Cott, Weston, Leamington, February 27th.—Well we have had winter this last fortnight and no mistake. Drifting, blinding snow nearly every day, and very severe frosts at night; hives all had to be shaded,

* This point cannot now be considered doubtful, but it must be remembered that Herr Braun's verses were written many years ago

so as to keep the bees in as far as possible, as when there was a bit of sunshine the glare was so great as to fetch many out to their destruction. I am glad I qualified my last Echo with passing the winter '*so far*.' Some of our roads had to be cut through six feet of snow for passage-ways; it is not yet over.—JOHN WALTON.

Stoke, Devonport, February 28th.—A beautiful, summer-like day, after a fortnight's frosts. Bees thoroughly enjoying it. My three stocks have each been carrying in pollen—viz., two with right-angled frames were fanning from noon until 3 p.m.; one with parallel frames (last year's artificial swarm) very active, but not fanning. Each was fed up to October 25th, and has now a first candy cake over the feed-hole. My small garden is only seven yards square, surrounded by a seven-foot wall; hives on south side of north wall.—J. F. R. A.

North Leicestershire, March 3rd.—Snow, snow, snow, and nothing else but snow; wreaths three to four feet deep in front of hives. Bees flying out during gleams of sunshine, to fall and perish in the snow. All stocks alive, and 'choke full' of bees from corner to corner. Oh, for a mild day, to give them a 'slush' of syrup. —E. B.

Limerick, February 29th.—Perhaps, your English bee-keepers might like to hear a little more of their afflicted brothers over here, though I cannot complain, as I averaged 74 lbs. per hive last season, about 10 lbs. of that being extracted, and increased my stocks to twenty-six. Early in August I divided my twelve hives, and gave a young queen to each half hive, fed up, and got them to work out frames. In the end of same month I gave each a driven swarm, and made up two hives out of five swarms, put them on stored comb, and fed up well with about 4 cwt. of sugar, which gave me late brood. All the hives were closed up at the end of September. On looking at them last week, I found all in good condition and plenty of food. Some of the straw hives I bought weighed up to 66 lbs. of maiden honey, the combs being up to three inches thick. I worked on non-swarming system, and used 1¾-in. sections, unless about fifty 2-in. I could dispose freely of the former at a good price, whereas the latter did not find a ready market. The 1¾-in. have such a complete appearance, especially the open-sided, when well worked out. I find they travel just as well, but require careful handling in removal from crate. I send mine about one hundred miles to market, and have no breakdown. I use spring crates, home-made. The position of the bar-frame is a subject bee-keepers seem not to agree on. Why not use a hive such as 'The Cowan,' with moveable lift for frames? Have the outside case 19 in. square inside; it leaves plenty of room for packing, and you have a cool hive in summer. The frames can be put either parallel or at right angles to the entrance, which is a great advantage over any other make. Some of my neighbours feed their bees on roast sparrows. They certainly pick the bones clean, and owners say they get a gloss. I trust I have not trespassed too much on your valuable space.—ALBA.

Belmont, Ontario, Canada, February 14th.—The weather is very steady, too much so for outdoor wintering. In most places bees have not had a fly since November, but so far they appear to be in good condition. If stores are good, and bees have one good fly in midwinter, and other conditions are properly attended to, their safety is assured, though they should not have another until April.—S. T. PETTIT.

NOTICES TO CORRESPONDENTS & INQUIRERS.

S. J. G.—1. *Moving Bees into Clean Hives* should not be done except on a mild, genial day when bees are freely on the wing; say, quite the end of March or during April. In this matter *hurry slowly*. 2. *Use of Excluder on top of Brood-nest.*—There is a divergence of practice in this matter. The advice referred to relates to two entirely different sets of circumstances. If the queen has plenty of room below, there is little fear of her ascending, but to prevent mishap most of the Americans who produce sections largely use some kind of honey-board as a deterrent.

F. G.—1. See reply to 'S. J. G.' We would spray slightly. 2. *Combs too Wide.*—Pare them down with a sharp knife dipped in warm water. 3. *Sketch of Drone Trap.*—We have no block just at present. 4. *Working for Extracted Honey.*—Wired foundation is not essential. We have done well with ordinary foundation.

SCOTSMAN.—1. *Spring Dwindling: to prevent.*—Have no weak colonies. In the autumn weed out all weak colonies, supersede all poor queens, give each colony a good supply of wholesome food. In the spring, unite all weak colonies, contract brood-nest according to the size of the cluster, keep them packed up cosy and warm. Do not retain any old queens. Shade entrances when there is snow laying. 2. *Correct Quantity of Syrup for Stimulating.*—This varies according to the quantity of brood being raised by each colony. It is easy to commence gently and increase slowly as the brood increases, always watching that the bees do not store it. Thoughtful observation must be your guide. 3. *Getting Foundation drawn out in Spring.*—Feed gently and *very* regularly. After, say, 10th April, you can, if the weather is genial, insert a sheet of foundation in centre of brood-nest, which should be drawn out in twenty-four hours. Remove it, inserting another; remove that, but leave the third for bees to rear brood in. You can repeat this operation once a-week, at the same time removing any combs at the outsides of the brood-nest which may become empty. Do not let them be short of food. 4. *To get Straight Combs.*—In spring pare down any inequalities. Notice that the most even side of an old comb is next to any fresh sheet of foundation you may insert. Have your hive level. Some bee-keepers give less space to a sheet of foundation than 1½ in. until partly drawn out. We sympathise with you as to your climate, but envy you your delicious heather honey.

H. J. A.—*Wire for Cage of Extractor.*—Tinned wire is the best when it is to be got. You need not fear to use galvanised netting. Carefully wash when done with.

DUROTRIX.—*Wire for Foundation.*—Nothing will do except tinned wire: No. 30 size. Vertically, about four or five wires to a frame.

R. E. THOMAS.—1. *Foundation.*—Give full sheets of natural-based. 2. *Unsealed Honey.*—We should like to see an ounce sample. 3. *Bee House.*—If properly built, it will cost you more than a separate weather-tight roof for each hive. Have you tried very thin zinc painted with two coats of white paint on *both* sides over ½-in. boarding? 4. *Capacity of Hive.*—Twelve frames are very useful.

IGNORAMUS.—*Suspected Comb.*—The comb sent is free from foul brood, and may be safely used as required. 2. *Secretary of Lancashire and Cheshire B.K.A.*—Mr. W. L. McClure, The Lathams, Prescot, Lancashire.

W. M.—*Dead Bees.*—Without a critical microscopical examination we should say the bees sent died from natural causes. Perhaps they have not been able to reach sufficient food.

MALTA.—1. *Do Bees Sleep?*—We are inclined to reply to this in the affirmative. When the quilt is gently removed, they are often seen in their cells perfectly motionless, lying with their heads against the bottom of their cells and their abdomens slightly protruding. 2. *Sugar for Syrup-making.*—In feeding bees that sugar is best which is as far as possible free from any chemicals or other results, as well as from those dyes

which are freely used to make sugar bright-yellow or snow-white. The primitive uncrystallised sugars are therefore the best—Porto Rico, Barbadoes, &c.—then refined, Pearl sugar (Duncan's), small white crystals, &c. Unless, however, the Porto Rico or other soft raw sugars offered in the shops can be relied on as true to their names, and also as such sugars leave a sedimentary matter clogging up the holes of the feeder, we advise the use of the Pearl (similar to the granulated sugar so much in use in America) or refiners' small white crystals. 3. *Pollen.*—This, the fertilising dust of flowers, is moulded to the shape of a small ball, and is carried by the bees on their hind-legs to the hive. The pollen seen by you on the heads of bees has not been placed there by their voluntary action, but has adhered to them; this is frequently seen when the pollen-masses of orchids are visited by the bees. 4. *Wasps and Hornets.*—Wasps belong to communities similar to those of bees. These communities consist of a queen, males, and neuters or workers. The hornet (*Vespa crabro*) is a large kind of wasp. The community (which is supposed to contain about 200 individuals) is governed by the same laws as wasps. On the approach of winter, the males and neuters perish, some of the females alone surviving.

H. SHARP.—*Gorse.*—Bees visit this plant in numbers, but they are not very partial to it. They gather from it pollen of a light-brown or dirty-yellow colour.

ENQUIRER.—*Standard Frame.*—The standard frame of the B. B. K. A. is 14 inches long by 8½ deep, the top bar being 17 inches long, $\frac{3}{8}$ths of an inch thick, the bottom bar $\frac{1}{2}$th, the side bar $\frac{1}{4}$th, the width being $\frac{7}{8}$ths of an inch. There is much diversity of opinion among bee-keepers respecting distance-keepers, broad-shouldered frames, &c., each different kind having its supporters. But we are of opinion that frames can be manipulated with greater ease and rapidity by not having any distance-guides at all.

R. W.—*Bacillus Minor. Hives, &c.*—1. Examine the hive on the first warm day, when bees are flying, and if you find a fair number of bees—say sufficient to cover three or four frames—confine them to these frames by division-boards, and feed with phenolated syrup according to Cheshire's recipe (about $\frac{1}{60}$ part phenol) from a bottle-feeder. 2. Remove from the hive all spare frames of comb, and clear them of dead larvæ. Then spray these combs with carbolic solution (two ounces of carbolic No. 5 to a pint of water). Expose them to the sun and air for a few days until dry, and keep them for enlarging the hive space as required. 3. Directions as to quantity are given on the bottles of phenol, sold as Cheshire's by all dealers. 4. Tiering-up hives having ten standard frames are large enough.

*** *Several Replies to Queries are postponed till our next.*

We should be obliged by any trouble taken by Bee-keepers in forwarding to us the names of Cottagers to whom the 'Bee-keepers' Adviser' may be sent.

Mr. J. Huckle, Secretary to the British Bee-keepers' Association, desires us to state that he has received an order for various pamphlets, with an inquiry respecting loan of diagrams. No enclosure was made with the order, nor the name of the writer given.

Business Directory.

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Editorial, Notices, &c.

'THE BEE-KEEPERS' ADVISER.'

We desire to express our thanks to all who have kindly assisted us in the distribution of the *Bee-keepers' Adviser*, and in forwarding us the names of surrounding bee-keepers. We are sure it will give all pleasure to hear that we have every reason to be satisfied with the manner in which it has been received and the measure of support which has been accorded to it.

We shall still be pleased to send copies for distribution on receipt of names and addresses from any who may be interested in the development of bee-keeping; and we shall feel grateful to all who will kindly second our endeavours to circulate our publication amongst that class which we have so earnest a desire to reach.

A CO-OPERATIVE FESTIVAL.

The National Co-operative Flower Show, which created so much interest at South Kensington last year, will assume much larger proportions this year, and will be held at the Crystal Palace on Saturday, August 18th. The prize schedule shows that upwards of 320*l.* have been subscribed in prizes, as against 60*l.* last year, and every kind of vegetable, fruit, flower, and honey in season, is included in the 200 different classes. If the entries are at all in proportion to what they were at the last Show, it will be one of the largest collections of *bonâ fide* cottagers' productions ever held. There is also to be an exhibition of home industries, which should be very instructive, and an exhibition of produce from co-operative workshops, both English and foreign. Cheap excursions will be arranged in connexion with almost every Co-operative Society in the kingdom, so that their members—there are now upwards of a million—will be able to attend the first holiday festival for Co-operators which has been held. The Secretary of the Show, Mr. W. Broomhall, of 1 Norfolk Street, Strand, will send particulars to all interested inquirers.

PRACTICAL WORK IN THE APIARY.

SPRING FEEDING.

In our last article we alluded to feeding generally, but we will now treat more especially of feeding in spring, what sort of food should be given, and how it is to be given.

If the bee-keeper wishes to derive full advantage in stimulating brood—rearing early in the season—he must commence to feed his bees as soon as they begin to fly freely in the spring. Before the bees are examined and the hives are overhauled we make it a rule never to give liquid food, but supply them with candy pushed in under the quilts on to the tops of the frames. The way to make candy has been described on page 57 of this year's *Journal*. But after an examination has been made, and the hives have all been overhauled, we can safely give liquid food. We, however, make the bees first use up what stores they may have in their combs, and this is done by either uncapping some of the sealed cells with a knife, or scratching them with some sort of pointed instrument, such as a fork, nail, or anything that will break the sealing and allow the honey to flow. This will stimulate the bees to activity, and in a few days some more may be uncapped, and when the bee-keeper sees the store nearly exhausted he may resort to syrup. This must not, however, be given in large quantities, about one quarter of a pint is usually sufficient, although a little more can be given if the colony is very strong and there is much brood. The chief thing is to give bees just about as much as they can consume, and not to exceed this amount, or they will store it in their cells, and this is not our object. As the colony grows and brood increases the quantity of food will likewise have to be increased. Above all things the bee-keeper must bear in mind that when feeding is once commenced it must be continued regularly without intermission, for if stopped, and the bees are not able to collect any out-of-doors, the consequences may be fatal. The bees have learned to depend upon the food, and consequently have reared large numbers of young: and the most critical time, just before the honey flow, is at hand, during which it is more important than ever that they should not run short of food.

Spring flowers will yield some pasturage, but frequently not enough to keep the bees going, so that the deficiency must be made up by the bee-keeper, although unfortunately some stop feeding just when the bees most want it. Far better not feed at all than having once commenced stop too soon. When bees commence to collect abundantly out-of-doors, they will disregard the food given to them. There is no necessity to give bees food every day, for feeders may be so arranged that they can take the food as they need it in small quantities, so that when once filled there will be enough syrup in the feeder to last several days. We prefer feeding on the top of the hive,

and if the bee-keeper does not wish to go to the expense of a special feeder he can make one himself at a trifling cost. He will require a piece of board with a hole in it, 1½ inches in diameter, and on this he can place a piece of tin pierced with a few small holes in such a way that the bees can have access to one, two, or more at the will of the bee-keeper.

A better material than tin would be vulcanite, and holes are easily made in this with a small knitting-needle made red-hot at the point. To hold the syrup an ordinary low wide mouth pickle-bottle will do, if there is nothing better available. The quilt must have a hole cut in it, and the board, as in Fig. 1, placed over it, taking care that this is level, otherwise when the bottle is inverted the syrup is likely to leak out. The bottle is then filled with syrup, and on the mouth we place a piece of tin or a tin shovel, invert it, as shown in Fig. 2, place the shovel on the vulcanite stage, and with one hand draw it away, holding the bottle steady with the other hand. If carefully done, not a drop of syrup will escape. Adjust the vulcanite so that the bees have access through only one or two holes at a time, and cover the bottle. Any rough box may be made to go over the bottle, as this will prevent it being knocked over, and is better than flannel or other bags, which only soak up any spilled syrup, and are always messy and sticky. Bottle-feeders with regulating stages may be purchased of manufacturers at from 1*s.* 6*d.* upwards, their number is legion, but they all work upon the same principle. The illustration, Fig. 3, of one of the most convenient, the 'Raynor,' will show the principle upon which they are constructed. The bottle, which holds about a pint and a half, is fitted inside with a screw metal cap, coated inside with cork, so that when screwed on tight no leakage can by any possibility take place. The cap has a semicircular piercing of twelve small punctures, corresponding with a slit in the stand or stage, one eighth of an inch wide, and an index finger for regulating the supply, rendering the feeder available for gentle stimulation or copious feeding, when all the holes are turned on.

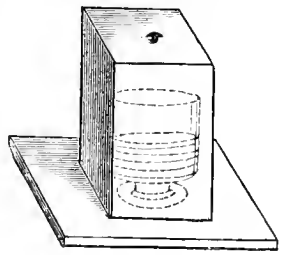

Fig. 1.

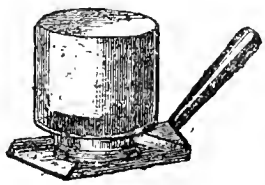

Fig. 2.

The principal difference from other feeders of the same type is that the feeding-stage, instead of being of the ordinary form, is dome-shaped, and the under side is lined with cloth, which renders it impervious to moisture and non-conductive of heat. The section of stand in the figure represents the interior of the dome, with a projection in the centre, to which the bees extend the cluster from the combs beneath. The stand is entirely of wood, and the bees do not come in contact with any metal. The liquid food should consist of sugar syrup. Some years ago we carried out a number of experiments, and found that the best food, and one that suited bees better than any other, was made by boiling 10 lbs. of white lump sugar in 7 pints of water for a few minutes after all the sugar has dissolved. When taken off the fire, we put in 1 oz. of vinegar, 1 oz. of salt, and 1 oz. of salicylic acid solution, as a precaution against foul brood. This solution is made by dissolving ½ oz. of salicylic acid and ½ oz. of soda borax in 1 quart of warm water. The syrup is then put into a can with a spout and is ready for use. A caution is here necessary, and that is, on no account use zinc cans or shovels for the syrup, for the acid in the syrup acts upon the zinc just as we have repeatedly pointed out does that of the acid in the honey. By far the best form is the 'toilet can' shape, like that introduced by Mr. Abbott many years ago. It has an ordinary spout and a brass nozzle with three tubes in it, which can be screwed on or taken off, and the tubes enable the bee-keeper to pour out a fine stream of syrup if he wishes to fill combs. The spout should not be covered with perforated metal, as this is constantly being stopped up by the solid impurities in the syrup, and is a constant nuisance, as we have found to our cost. A general caution is necessary in feeding: Never spill or leave any liquid sweets about, and cover the food bottle to prevent the bees getting a scent or taste of the syrup, which would invariably induce robbing. Filling the bottles is better done at night.

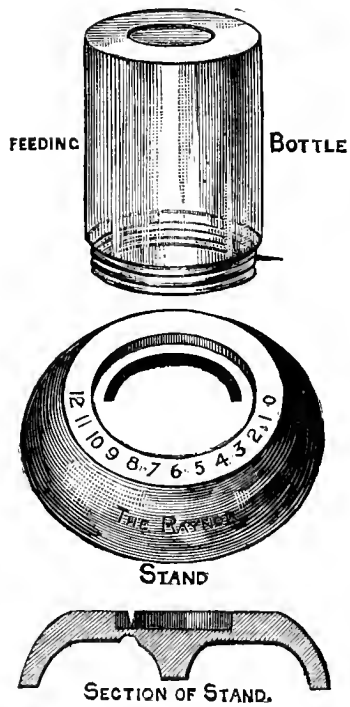

Fig. 3.

ONE SIDE CELL COMB FOUNDATION.

Under the heading 'A New Artificial Comb,' we gave, on page 7 of the *B. B. J.* for this year, a letter from M. Koerbs, respecting a new comb which he had discovered, and which he stated could not be used for brood-rearing, and also the remarks of M. Gravenhorst respecting it taken from the *Deutsche Illustrierte Bienenzeitung*. This announcement has, naturally enough, caused a great deal of talk, and many speculations and 'guesses' as to what this artificial comb could be have been the result. The article was inserted after some correspondence with M. Gravenhorst about it, and a promise from M. Koerbs to send us a sample comb for inspection if we would keep the secret. This we consented to do; but, at the same time, pointed out that we did not consider the means adopted for making the invention public would be one that would commend itself to British bee-keepers, and that they would regard with suspicion a promise to send out a pamphlet only when a few thousand subscribers at

1s. 6d. each were obtained. How many thousands it was not stated. We also suggested that M. Koerbs would do better by selling the invention to some foundation-maker, or take out a patent. Our suggestion has been acted upon, and now the invention is in the hands of M. Otto Schulz, of Buckow, one of the largest manufacturers of foundation on the Continent of Europe. In the meantime, the ball being set going, ingenious minds went to work, and not having any secret to keep, we, as well as others, had our own ideas of how a comb should be constructed to fulfil all the requirements set forth.

We were led to the ideas from our recollection of the behaviour of our bees with the flat-bottom wooden base foundation, introduced many years ago by Mr. Abbott, and his proposal at the meeting on the 7th of April, 1881, to use these combs with wooden bases as dummies. In that year we had several such combs, and on some of them, strangely enough, the bees built regular cells only on one side, nibbling the wax on the other side and using it for making struts or braces at right angles to the board. This we found was because the board was not sufficiently covered with wax, there being more on one side than on the other. Bearing this experiment in mind, the thought occurred to us that if bees were induced to build combs only on one side and to lengthen the cells so that the queen could not lay in them, the desired result might be attained. We therefore prepared a drawing, and asked a manufacturer to make us some foundation on calico with cells on one side only. The illustration is a reduced copy of drawing sent, and shows our plan of fixing the foundation to the side of the frame. Since then there have appeared the ideas of some of our own bee-keepers on pages 22 and 34 of *B. B. J.* However, it now appears that the same idea of having cells built on one side of foundation only and fixing this to the side of the frame instead of the centre occurred to others besides ourselves, for about a week after this our friend M. Bertrand sent us a circular describing the identical thing. A few days later, in the second number of the *Nordlingen Bienenzeitung* for this year, appeared from the pen of W. Vogel, the editor, a description of the very same thing, and it has since transpired that the invention of M. Koerbs is the same.

With the *Centralblatt* for 1st March we receive a circular from Otto Schulz, in which he states that the same idea occurred to him, and he corresponded with Koerbs about it, but as the latter asked so high a price for his invention, he could not come to terms. He, however, made application for a patent, and subsequently visited Koerbs and submitted his own ideas to him, with the result that they have come to terms, and by amalgamating their ideas the article will be manufactured and sold by the name of 'Schulz-Koerbs' foundation. The new foundation is made on glass, wood, tin, card-board, or other material, with the impression of the cells in wax on one side, the other being left smooth. Of those who wrote to us, it will be seen that only one is anywhere near the mark, namely, Mr. J. Hall, who 'guessed' that Koerbs did away with the midrib, although he did not 'guess' that the rib was placed on one side. Although we do not for one moment wish to claim any priority in the invention, and should have thought nothing about it had not our attention been directed to the matter; still, while giving M. Koerbs the credit of the invention, it shows that when a number of minds are directed upon one subject, the same idea may occur to several at the same time, as it has to Vogel, Schulz, and ourselves; and we might even include Mr. Hall, as his idea is very near the mark.

The idea of having one-sided foundation is certainly novel, but it remains to be proved by experiment whether it will be of so great a value to us as it would be to German bee-keepers, whose hives have a brood-space so much smaller than ours.

Embedding various materials in wax for foundation is not new, and has been tried from time to time during the last twenty years or more; we ourselves used foundation on paper fifteen or sixteen years ago, and it has been repeatedly described, as well as embedding thread, silk, and other substances, both in the English and American journals, so that there is no novelty in this. We take the present opportunity of mentioning this because a correspondent on page 38 has evidently fallen into error by supposing that 'the idea of embedding other material than wire' originated with him. A search in the back volumes of the *B. B. J.* would have shown him he was mistaken.

USEFUL HINTS.

With a change of wind from north to south we have a higher temperature, and a few hours' sunshine has afforded the bees the opportunity of flight so long desired. High winds and threatening showers have forbidden manipulation even where desired; but the departure of frost and snow, with the advent of milder weather, is a decided gain.

Artificial Pollen is now more necessary since the late severe cold has effectually prevented a natural supply for some time to come, save, perhaps, in the Southern counties and the 'Emerald Isle.' Of this island the Venerable Bede, in his *Ecclesiastical History*—written *circa* 800 A.D.—tells us that: 'For wholesomeness and serenity of climate, Ireland far surpasses Britain; for the snow scarcely ever lies there above three days; no man makes hay in the summer for winter's provision, nor builds stables for his beasts of burden. The island abounds in milk and honey.' An El-dorado, truly, for members of our craft! No wonder that our Irish brethren should so far surpass their English compeers in obtaining large yields of honey.

By those who prefer the plan, pea or lentil meal—which can be procured in small packets at almost any grocers—may be presented to the bees thus: take clean dry empty frames of comb, and dredge the meal from an ordinary flour dredger into the cells, while the combs are held or placed at an angle of 45°. When the cells on both sides of the combs are nearly full, place the combs in an ordinary frame-hive and set it in a sheltered, sunny position near the hives and beside the water-trough. If a comb containing a little unsealed honey or syrup be placed amongst the pollen-combs, the bees will speedily find the spot and proceed forthwith to utilise the pollen; if placed on a stand, and sheltered by a roof raised a few inches above the hive, the latter may be considered a fixture for the spring months, the combs being replenished with meal as often as requisite. At a time like the present, when little or no natural pollen is to be obtained, an artificial supply is of great value in encouraging breeding, and in eventually raising the population of the hives to the highest point by the time of plenty arrives.

Manipulation, or examination of colonies, may be made in fine weather towards the end of the month if done judiciously. Bees even now are much inclined to rob their neighbours, therefore the greatest care must be exercised when opening hives. The best time is from four to six p.m. on a calm, mild evening, when there will be little danger of incitement to robbing. The carbolised cloth is preferable to smoke, causing less excitement and subduing the bees more effectually.

The quilts should be quickly stript off, and the car-

bolised cloth as quickly spread over the frames. Manipulation should proceed from each side to centre alternately. But if the bees show themselves in force, and display a vindictive temper, do not insist on gaining a sight of the queen; but when the frames have been examined from the sides to the brood-nest, *i.e.*, as far as the cluster of bees, forbear to disturb the nest further, especially as soon as evidence of breeding is afforded. There is no surer guide to the prosperity of a colony than the dash of its individual members, severally, or simultaneously. 'Aye, buy the *wicked* skep,' is sound advice, but in these days of 'Bee-keeping made easy,' by the application of 'Apifuges' to the exposed portions of the human frame, and of 'Carniolanising' our colonies, such advice will be of no further use; and the exclamation of our highly esteemed Scottish brethren—'Eh, mon, bit they stang deevilitch!' will never again be heard in a Northern apiary when an attack by hybrids is delivered upon the person of an unsuspecting inquirer into the mysteries of apiculture. But we cannot forget the 'good old times,' and so, despising 'Apifuges' (save the mark!), and 'Carniolanising,' we continue to prefer 'the wicked skep' and the 'fiendish' hybrid colony domiciled in the frame-hive.

Quilts.—Enamel cloth, glazed side downwards, may now be placed upon the frames, and covered with felt, carpet, or chaff cushions. The more warmth the better for our bees. Over all, a crown-board of wood, or preferably of straw, slightly weighted to keep all quilts firmly in place, will be an advantage.

Combs left by defunct colonies should be thoroughly cleared of dead bees, and sprayed with carbolic acid, or salicylic acid, solution, then dried in the open air, and afterwards stored in a dry place, secure from moths, until required for further use. We keep an old extractor with powerful gearing solely for suspicious combs, and through which we pass all old combs, after well soaking them in warm water. Greater part of the dead bees and useless pollen is thus extracted with little loss of time and less trouble. But this machine is never used for normal extraction.

Olla-podrida.—*Eggs by Post.*—We have no doubt that a frame of eggs, if despatched immediately after deposition, by mail, on a warm summer's day, will answer perfectly for queen-raising, and we do not speak without experience. *Fresh Blood.*—Some thirty years ago, before the introduction of the Italian Alp bee into this country, and before the extraordinary strides in the improved methods of bee-keeping commenced and carried on chiefly through the instrumentality of the B. B. K. A., and spread to every corner of the land, we may well suppose that remote districts existed in which in-and-in breeding of bees prevailed to a great extent. But that the case cited by Mr. Woodley in his letter (1486) as a case of perfect isolation—'seven miles from everywhere'—where bees had existed for a century without any infusion of fresh blood, is 'proven,' we cannot for a moment grant. And from his second case, cited in his letter (1498) of sixty years' isolation, we must withhold our *imprimatur*. In Mr. Woodley's argument, the instinctive preference of queens to mate with drones of fresh blood, or with those of new varieties, is kept entirely out of sight, as also is the chance of the existence of colonies *ferce naturæ*, domiciled in hollow trees, roofs, or walls of buildings, &c. This propensity of queens to mate with drones of fresh blood has been repeatedly referred to for years past in this and other many Journals. In the *B. B. J.* (vol. v. p. 11), 'Renfrewshire Bee-keeper' writes on this point and on in-and-in breeding thus:—'In the first volume of the *Journal of Horticulture* I referred to cases of parties keeping bees in good localities, far isolated from others, doing well at first, and gradually and unaccountably dwindling away until they became extinct. A fresh stock procured again flourish remarkably, and in the course of a few years again dwindle away; and always point out to stock-owning and poultry-keeping friends how nature guards against the evils attendant on breeding from near affinities in the honey-bee. Did the young queen mate *within* the hive, she must inevitably pair with full brothers; did she indulge in but a short flight over her own apiary, probably with cousins nearer or more distantly removed. But, to avoid all this, she is impelled to a far flight through ether for that indispensable change of blood. Confirmatory of all this—with a well-stocked apiary of strong colonies, with pure-bred Italian queens by the mother's side, and, consequently, clouds of equally pure drones—through all these years I only *once* managed to secure pure impregnation, and that was in the case of a queen hatched early in spring—presumably, fertilised by Italian drones, the progeny of a drone-breeding queen—long before any black drones appeared in our district. Although the agile Italian princesses seem to outstrip in flight their lazier drones, and seek alliance with the dark sons of the land, the Italian is equally the favoured swain with the native brunettes. In a radius of from one to close on five miles from my apiary, crosses from the reversed parentage abound, and the humble cottager points with honest pride to his "striped bees," and the value of such crosses on that side are so much appreciated for prolificness and industry that in their disposal the extent and distinctness of the banding are carefully appraised. I am decidedly of opinion that even the poorest cottager would be handsomely repaid for purchasing an Italian queen, and placing her daughters at the head of every stock in his apiary.' So superior to the old black race had this experienced Scotch apiarist proved the Italian black cross to be both in fecundity and honey-collecting powers. And his experience is *exactly* our own. Every word he has uttered we can fully endorse. Nearly twenty years ago we were the first to introduce the Italian bee into our own neighbourhood, and in a few years afterwards there were few colonies within several miles of our apiary in which the 'yellow stripe' was not present; while in our own apiary, except by practising the Kohler method, it was impossible to obtain pure fertilisation. Surely, then, if nature has implanted this instinct in the queen and drone bees, we are going contrary to nature in arguing, as Mr. Woodley does, that the same rule which applies in the cases of cattle, sheep, horses, birds, and all other creatures, does not apply in that of insects, notably in that of our bees. All experienced apiarists—so far as we know—hold the same views on this subject. Mr. C. N. Abbott, if we rightly remember, has stated somewhere in the earlier volumes of the *Journal*, that nine out of ten of his young Italian queens persisted in mating with black drones. Why this longing for change if in-and-in breeding succeeds so admirably as Mr. Woodley supposes?

Inside Paint and Enamel Cloth gave precisely the results we should have expected when applied under the circumstances described by Mr. Adcock in his letter (1504). Had his hives been on the right-angled system, and full ventilation below allowed, with a forward pitch, he would have found neither internal dampness nor dead bees to any extent; at least, this is our experience. It is very important that hives should have a southern aspect, and that the bees should be able to cluster on the front side.

ASSOCIATIONS.

BERKSHIRE BEE-KEEPERS' ASSOCIATION.

In your issue of February 9th a letter appears (1472) from Mr. W. B. Webster, respecting the publication of a monthly paper by our Association as its own organ. The letter contains an account of the action of the Association, which we cannot (in the interests of the Association) allow to pass uncorrected. The facts of the case are, briefly, as follows:—

After consultation with various members of the Com-

mittee, a definite proposal to originate such a paper was submitted to the quarterly meeting, in the draft annual report. On the suggestion of Mr. Webster this proposal was modified to the following terms:—'Your Committee consider that the time has now arrived when they should adopt some more convenient and effective means of intercommunication among the members, and have decided at an early date to consider the advisability of publishing a monthly paper for free distribution to all members of the Association.'

At the annual meeting of the members, which was fairly attended from most parts of the county, this proposal was supported by all who spoke on the subject, except Mr. Webster, whose speech failed to elicit any response, while those in favour of the scheme were heartily endorsed. The general meeting of members having so emphatically approved of the proposal, the only matter really to be decided by the Committee was its practicability. A special meeting was called for the purpose, at which there was more than an average attendance: and it was then announced that one of the members had offered to take all financial and editorial responsibility in the matter, so that the Association would incur only a small expense beyond that incurred by the circulation of the *Bee Journal*. The question was therefore decided in the affirmative, Mr. Webster being the one dissentient voter.

With reference to the prospective character of the 'Berks Bee-keeper,' of which Mr. Webster writes at some length, we will only say that had he waited until the publication of its first (or February) number, we think he would not have written as he did, and we are confirmed in this belief by the fact that the March number contains a voluntary contribution from his pen.

It will, we think, be now seen that the action of the Committee was perfectly *bonâ fide*, and that by their action they were carrying out the wishes of the members as expressed at the annual meeting.

ARTHUR L. COOPER, *Honorary Secretary*,
A. D. WOODLEY, *Assistant Secretary*,
Berkshire Bee-keepers' Association.

[We are very pleased to present the 'account of the action of the Association' from the point of view of the secretaries. We think, however, the proposal of a local paper was inopportune, and scarcely necessary, as with the *Bee-keepers' Adviser* the Association could have done all they contemplated without it.—ED.]

WORCESTERSHIRE BEE-KEEPERS' ASSOCIATION.

The Annual General Meeting of the Members of this Association was held at the Guildhall, Worcester, on Saturday last, March 3.

The Rev. W. M. Kingsmill, of Tibberton Rectory, Droitwich, presided, and there were also present:—Mr. A. C. Dowdeswell (Ripple Hall), Rev. R. T. W. Brayne (Broomhall), Mrs. Swinden (Defford), Mr. C. H. Haynes (Hanley Castle), Mr. A. W. Martin, Hon. Sec. (Evesham), Mr. H. H. Griffin (Cleobury, Mortimer), Messrs. Herbert Goldingham, G. H. Latty, W. E. Williams, J. Neale (Worcester), Mr. H. H. Beakbane, Messrs. J. H. Landon and P. Glover (Stourport), Mr. A. Thorpe (Hallow), Mr. John Clearby (Offenham), Mr. and Mrs. E. T. Footman (Martley), Mr. J. W. W. Bonghton (Lower Wick), Mr. J. Powell (Lulsley), and Mr. E. Davenport, Expert (Stourport).

The Hon. Sec. read the Treasurer's statement and the Report of the Committee for the past year, which were ordered to be printed and circulated amongst the members. The Report stated that the committee had not felt themselves justified in holding any annual show during the past year, owing to insufficiency of funds to defray the expenses of the same, and the bee-tent had not been sent to any horticultural show, as the festivities connected with the Jubilee had thrown other arrangements on one side. The number of members at the close of the year is 161, many withdrawals having taken place through non-payment of subscriptions. The total receipts from members amounted to 39*l.* 19*s.*, and it is satisfactory to report that there is a balance of 14*l.* 13*s.* 7*d.* in the hands of the Treasurer. The past honey season had, on the whole, been a good one, and though short owing to the hot and dry weather the quality and quantity gathered was above the average. The circulation of the *Bee Journal* had been carried out fortnightly during the year, but it had been sent on so irregularly that the committee do not recommend its continuance, unless some plan can be devised under which members will forward it at stated times. In conclusion, the hope was expressed that members would display more energy and enthusiasm during the coming year, and use their best endeavours to promote the good objects the Association has in view.

The election of officers then took place. Earl Beauchamp was re-elected President, and the following as Vice-presidents:—The Bishop of Worcester, The Dowager Lady Hindlip, Lady Georgina Vernon, Lord Edward S. Churchill, the Hon. G. H. Allsopp, M.P., Sir Richard Temple, Bart., M.P., Sir E. A. H. Lechmere, Bart., M.P., Mr. John Corbett, M.P., and the Mayor of Worcester. The committee were re-elected, Messrs. J. H. Gunn and W. E. Williams taking the place of two retiring members. Mr. T. J. Slater was re-elected Hon. Treasurer, and Mr. A. W. Martin Hon. Sec. Messrs. A. W. Martin and C. H. Haynes were appointed representatives to the Quarterly Conferences of the B. B. K. A.

The annual ballot for hives resulted in Mr. Thomas Moseley, Bishampton, Pershore, and Mrs. E. E. Davis of Welland, Malvern Wells, being the winners.

Mr. E. Davenport (expert) read his report, of which the following is an extract:—Although in many respects he wished he could give a brighter report, yet compared with some other associations the members are more numerous, the funds in a better state, and the vitality of both members and the executive strikingly greater. The income is in excess of the expenditure, and the zeal and energy of the hon. sec. cannot be surpassed. He started on his tour of inspection on April 13, which was continued at intervals till the end of July. Inclemency of weather at times compelled him to desist. Many strong stocks perished during the cold spring weather from lack of judicious feeding. In three instances the bees had actually died in the act of clustering in the central brood-nest, the combs surrounding being empty and dry, while in the outside combs there were stores in abundance. During the season 160 members were visited, and 544 stocks inspected, viz., 384 bar-frames, 241 skeps, and nineteen nondescripts. On comparing these numbers with those given by his predecessor, Mr. C. Brown, he found that the Association was on the 'downward grade.' In 1885 there were 523 skeps examined, and 520 bar-frame hives, making a total of 1043. This difference is accounted for by the diminution in the number of members, many of whom have become apathetic and withdrawn their membership. The stocks as a rule were very healthy, there was plenty of evidences of the vigorous condition of many of the apiaries, which was shown by the large quantities of honey gathered when the weather became warmer. No case of foul brood was met with during the tour; its existence was suspected at one place, but on minute examination it proved to be a bad case of chilled brood. Several incidents of varied character were met with: in one case crates of full sections which had been left on all the winter, as the owner in attempting to remove them was stung, and, beating a hasty retreat, had not courage to renew the attempt. In another instance two stocks were actually suffocated, and several others just on the verge, for in

another day or two they would have been dead; these were in straw skeps, with barely half an inch entrance, so when they became heavy with brood, the straw was pressed down, and egress and ventilation became impossible. There are many large apiaries in the county. At Welland, near Upton-on-Severn, there is one containing fifty stocks, belonging to Mr. J. H. Gunn, another at Evesham, owned by Messrs. Bailey and Gardiner, and another at Seaford Grange, Pershore, belonging to Mr. W. F. Gibbon, with this peculiarity that the owner is not anxious about the production of honey, but keeps his bees for the fertilisation of the fruit-blossoms, and sells his swarms at the low price of 1s. each to his work-people, on condition that they are kept in the neighbourhood. Other smaller but well-conducted apiaries exist at Hanley Castle, Martley, and Defford. In conclusion, Mr. Davenport wished to acknowledge the assistance he had received from so many of the members, and especially that of the hon. sec.

On the motion of the Chairman, seconded by Mr. Haynes, it was resolved that in order to free Mr. Martin from the considerable labour entailed in the discharge of the clerical duties connected with the Association, he be authorised to pay out of its fund at his own discretion, for the performance of such labour by a competent person, and he wished it to be understood that if Mr. Martin withdrew from the hon.-secretaryship it would probably mean the collapse of the Association, for it was by his energy and enthusiasm that it had grown, and he felt sure that there was no one else who could be found to do the work that he had done in its behalf.

Mr. Martin, in returning thanks for the vote, said that his professional duties were constantly increasing, but at the same time he should not like it to be said that the Association would fall to the ground in consequence of his being compelled to resign his office, which on his part had been a labour of love. He would be glad to see a little more energy displayed by the members generally and wished that his voice could reach to the extreme limits of the county and persuade some of those bee-keepers who were foremost in their ranks when the Association was started, but who, from apathy or selfishness, had since deserted them, to come back and give him and them all practical help. He would ask them to bear in mind that one of the fundamental objects of the Association was not so much to benefit themselves as others by promoting an industry, which, in spite of even adverse conditions, or some disappointment, was, he felt, surely spreading through the county and the country at large.

A vote of thanks to the Chairman, which Mr. Kingsmill acknowledged, concluded a very successful meeting.

Foreign.

UNITED STATES.

In Memoriam.

A. G. N. Todd, F.G.S.

Mr. Arthur George Nicholson Todd, Fellow of the Royal Geographical Society, and Associate of King's College, London, England, was born at Sandymount, Dublin, Ireland, on the 25th of February, 1843. He died on February 11th, 1888, at his home, 2122 North Front Street, Philadelphia, after a short illness from typhoid pneumonia. He was buried, with masonic rites, at Mount Moriah Cemetery, Philadelphia, February 16th.

In early life Mr. Todd was engaged in the dry-goods business, afterwards representing the large firm of Pim Brothers, & Co. as the manager of their branch house in London; in 1873 he made a flying visit to the United States in their interest. He first became interested in apiculture in 1870, and from that time he pursued the study of the bee and its products with ardour, upon both scientific and practical lines. During his travels in France, Italy, Switzerland, Germany, and Algeria, he became acquainted with most of the prominent bee-masters of those countries, especially with M. George de Layens, the famous French apiculturist and author, between whom and himself a warm friendship existed, and they were correspondents till quite lately. He commenced bee-keeping for a livelihood at Blidah, in Algeria, in 1877, and about that time he first imported comb-foundation and foundation-machines from Mr. A. I. Root, into France and Algeria. At the Paris Exhibition in 1878 he took the large diploma for bees, hives, and honey. He kept bees in Rambouillet, a small village near Paris, in 1878-9. At the Ville de Beauvais Exhibition, in 1879, he gained a gold medal, and at the Amiens Exhibition, same year, two silver medals.

Mr. Todd returned to America in 1880, and joined the Philadelphia Bee-keepers' Association in 1882, of which he was elected Vice-President in 1884, and re-elected in 1885, many of the meetings were made intensely interesting by his original papers and the active part he took in discussions. He was also a member of the New York State Bee-keepers' Association and Vice-President for Pennsylvania of the North Eastern Bee-keepers' Association. He made extensive displays of bees, hives, and honey, at the Pennsylvania State Agricultural Society's fairs in Philadelphia in 1884-5-6-7, taking eleven silver and bronze medals, and numerous cash prizes and diplomas. At the Burlington County Agricultural Fair, at Mount Holly, New Jersey, 1886, he was awarded a medal for honey manufactures. In 1886 Mr. Todd established an exhibition apiary in the Zoological Garden, Philadelphia, which has proved highly successful, thousands of visitors observing the bees at work in glass hives and the general manipulations in practical bee-keeping. This is the only exhibition apiary in a public garden in the United States. At bee-keepers' conventions and all assemblages of beemen, when the subject of honey has been discussed from a financial point of view, the cry has been, 'Create new markets and cultivate the public taste to a greater consumption of honey for domestic purposes.' It is safe to say that no one man has done more to popularise its use than Mr. Todd, and for this he should be gratefully remembered by bee people generally. If we had a few more workers of his stamp and energy we should soon see honey in daily use in most households.

Lecture on Wasps.—On Saturday, March 10th, a paper on 'Queen-wasps and Worker-wasps in the years 1886 and 1887,' was read before the Microscopical and Natural History Society of Ealing, by Mr. George Henderson, of Ealing. The interest of the paper was much enhanced by the exhibition of wasps and hornets' nests, &c., kindly lent by Mr. J. Hiam, of Astwood Bank, Redditch. After the reading of the paper, the lantern slides of Mr. Watkins, Hereford, were exhibited. The paper and its accompaniments were much appreciated.

Explanation required.—In the close of January last the wife of a neighbouring bee-keeper was removed by death. Two days before the funeral, on a warm afternoon, the husband and a son walking in the garden were surprised to see all their four stocks of bees out *en masse*, so that the air was filled with them as if with swarming. That same afternoon only a few of one of my seven stocks came out at all, about half a mile distant. Recalling to mind an old superstition, the father bade the lad tap the hives. And as he tapped them, at once the stocks respectively returned, not one stayed out. My friend was more astonished at their disappearance than at finding them flying out. I write to ask if there is any known clue to such conduct from a natural cause. I can vouch for the veracity of my friend, who sent me word the same evening, asking an explanation.—E. C. P., *Harrow*.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

'OUR HONEY IMPORTS.'

The value of honey imported into the United Kingdom during the month of February, 1888, amounted to 528*l*. [From a Return furnished by the Statistical Department to Mr. Bellairs.]

A NEW HUT.

'No plot so narrow—be but Nature there—
No waste so vacant, but may well employ
Each faculty of sense.' —COLERIDGE.

[1528.] On the approach of winter we left the old hut to the earwigs, centipedes, and other creeping things. It was all right, the old spot, in the height of summer, but woodlice and all sorts of strange crawling forms abhorrent to most people are not agreeable co-inmates of such a conversational, cosy den as we desired. Therefore I set to work, with the help of a Huttite, to build a new one. A few particulars may be useful should any of your readers feel inclined to go and do likewise.

A sketch was drawn to scale giving seven feet by six feet inside measure. An estimated quantity of $4\frac{1}{2} \times 1$ boards (tongued and grooved) were brought together with 3×2 wood for the framework. These latter were rabbeted together and fastened each with three strong screws. The framework was levelled by spirit-level and rested on four large stones, one at each corner. The boards were then nailed to the framework, roofed with the same kind of boards and covered with roofing felt, the projecting ends of this roof being ornamented with a stamped zinc border. A lightning-conductor-looking finial was next fixed at each end of the peak of the roof, wooden flooring laid down, and so on. The whole labour was performed on three Saturday afternoons and evenings, and a jolly time it was. Cost of timber and nails, 1*l*. 6*s*. As it stands at present the hut is painted inside and out, and is bee-proof. Shelves are fixed round the inside, and under a revolving window is a table hinged to the side of the hut in front of two long settees (moveable). At one end (outside) a bee porch and alighting-board are fixed, whilst inside is a shelf on which is placed one of Abbott's 'Special' Observation hives, so that one can sit with the hive between and the light and watch the bees at work. An Aurora parallin lamp on a bracket near the table gives both light and heat. The floor is covered with thick kamptulicon, the table with a tapestry cover, the seats with bright-coloured rugs; a fibre mat completes the hut. In two hours we have got the temperature up from 26° to 55°, so we have at last a very comfortable meeting, smoking, and chatting-box. In summer time thirty seconds will give time enough to drop the table and carry out the seats, when extracting may be proceeded with. To make all bee-tight, an escutcheon covers the keyhole, perforated zinc the ventilators, whilst such bees as are carried inside can be set at liberty by giving the window a half turn.—X-TRACTOR.

PAINTING THE INSIDE OF HIVES.

[1529.] I can thoroughly endorse the Rev. H. W. Lett's (1514) advice to paint the inside of all hives with good oil paint. I have painted all my hives inside for thirty-five years, with the best results, as I found the wood in unpainted hives so wet in spring, that it is summer before the bees could get them perfectly dry: and in spring it is most important to have the hives thoroughly dry, to encourage breeding and health.

I have my hive-stands to slant to the front one inch in ten; the entrance is cut out of the floor-board and grooved to the back, so that all moisture immediately runs out of the hive; and I have had icicles two to three inches long from the water run out of the hive in twenty-four hours. No water ever lies on my floor-boards, which is most important in successful bee-keeping.—WILLIAM CARR, *Newton Heath Apiary, near Manchester, March 5th.*

PAINTING HIVES.

[1530.] May I say that I have made most of my hives, and have always painted the boards before putting together, those for the inside box with two coats on the air-space side; those for the outside box with two coats on both sides. Dovetails and ends were also painted. Floor-boards I generally paint on the ground side, and on the other side where the hive rests with a broad ribbon. The only hive that has been damp this winter was one which had the floor-board painted all over. I found combs of sealed honey to keep better in all the hives except the last mentioned, than in the very damp house I live in.

As to painting, it should be understood that painting as usually practised is more likely to make wood rot than not. Suppose you get a new gate. The carpenter brings it, beautifully made and fitted, and hangs it. Then he proceeds to paint. If the wood is not perfectly dry, as soon as the sun shines on the paint it will raise blisters. Then the sun and rain will loosen the joints and wet will get in, and the tenons and mortises will rot. Then the ground damp acting on the unprotected ends will rot them. If all the joints and the ends where the grain is cut across were well saturated with creosote before fitting together, the parts usually painted might be left in their natural state.

I am doubtful as to the good of painting both sides of boards, but if one side is to be left bare I certainly think it should be the inside, except the flat boards of the roof. I think that wax-cloth causes, perhaps, an excess of moisture.—W. M.

PAINTING THE INSIDE OF HIVES.

[1531.] The Rev. H. W. Lett appears to object to my advising bee-keepers not to paint the inside of their hives, and criticises in a doubting manner the description I gave (in the *B.B.J.*, No. 1504) of the condition of the hives I had so painted.

My winter dummies are about an inch and a half thick, filled with cork-dust, and have india-rubber tubing, such as is used to prevent draughts in ill-fitting doors, tacked to the sides and bottom, so there is no possibility of either heat or moisture escaping, except from the flight-hole, which varies in size from two to four inches by three-eighths of an inch. Perhaps Mr. L.'s dummies do not fit closely, so the heat escaping above draws a current of air in at the large flight-hole, and by that means gets rid of the moisture.

Concerning the hive which contained more than a pint of water, the floor-board is made so as to form a rapid feeder for condemned bees, the sides are raised all round flush with the inner walls of hive, forming a space sixteen inches by fourteen and a half by three quarters of an inch deep. Into this space a board or float half an

inch thick, and perforated with a number of holes, is fitted, upon which the bees rest while taking the syrup which is poured through a tube in the side of the hive. This board or float was removed when putting up the bees for the winter, leaving an enlarged space beneath the frames, and which I trust Mr. L. will now understand would easily hold more than a pint of water. Mr. L. has erroneously used the reasoning power of which he seems to think I am lacking. The wet standing in pools upon the floor was not due to the hives being *not* set level, but to the fact that they were *exactly* level, as Mr. L. can prove for himself by placing a hive with its painted floor-board perfectly level, and then gently pouring water upon it, he will find that it will hold considerably more than he at present appears to think possible, and quite sufficient for bees to float upon. His hives being tilted forward, the wet perhaps ran off unobserved by him. The wet certainly never came through the roof of the hive; had it done so, the quilts would have been wet, which was not the case. I make my own hives, and am most careful that all the parts are water-tight.

The imputation that, as a beginner, my statement as to the condition of my hives is not worthy of credence, I consider of but slight importance, for Mr. L. cannot possibly have any knowledge of the length of time I have been a bee-keeper, or of my experience in matters concerning their culture.

I confess I am puzzled by the concluding paragraph in Mr. L.'s letter (1514). If the walls are soaking with moisture (as he admits) when unpainted, what becomes of the wet when the walls are impervious to it by reason of the paint? In the winter the bees are at rest, and cannot fan it out (as I have seen them doing in the spring). It cannot surely all disappear in vapour at the flight-hole.

I still more strongly say, 'Do not paint the inside of your hives,' for yesterday I found dead what was one of my strongest stocks and with young queen (on nine frames) that was in such a painted hive; plenty of honey in combs, which were in a dreadfully mouldy condition, as are all the combs that are in the other painted hives, the other thirteen stocks appearing very dry and strong. Other combs quite clean as far as perceptible from the slight examination made.

I also should be glad if others would give their experience, two winters' trial of the system being quite sufficient to satisfy me that it is better to leave the *inside* of hives unpainted.—HAROLD ADCOCK, *Middleton, Northampton.*

BEES IN NEW ZEALAND.

[1532.] I have just received the following account from my brother, an old member of the Worcester B. K. A., who is settled in Waimata Valley, Gisborne, N.Z., and think it may prove interesting to some of the readers of the *B. B. J.*:—

'I have not brought my bees up to where I am now living, but left them down in the flat country, but when I am quite settled I shall do so. There are plenty of wild hives about. I took 12 lbs. of honey out of a tree the other day from a swarm that had only been there about ten days, and did not hurt the bees at all, and did not get stung. They were in the hollow at the bottom of a large tree, about seven feet in diameter, and I managed to creep into the hole with a piece of lighted corduroy and smoke them a little, then cut out the honey and put it in a bucket. I intend to fell the tree, as there are two more colonies of bees in it, and I shall transfer the bees into two hives. The bush is full of bees, which seem just like ordinary "Britishers." I have not seen any "natives" except mason bees, who plaster up everything, from sun-barrels to mackintoshes; they catch spiders and stupify them, and then seal them up for the grubs to eat. There was a row of cells in an old coat-sleeve in the wharre here, and I counted seventy odd spiders in it and none of them dead. The spiders here are most wonderful; there are some flat silvery ones that never spin webs, but pounce on the flies, and it is great fun to watch them as they walk backwards and forwards and sideways; you can almost hear them swear when they miss a fly. I am glad your bees have done well; you seem to have had a very good season.'—A. H. MARTIN, *Hon. Secretary, Worcester B. K. A. Eversham.*

CONSANGUINITY. (1454.)

[1533.] I cannot let the opportunity go by of saying a word or two on this subject, more especially as it seems to me the object of Mr. Webster's article is likely to delude bee-keepers into the belief that our native bees are degenerating. This theory, which has not a shadow of foundation in fact, is so often put forth by writers in the *Journal* that one suspects there must be some other object than that ostensibly stated to warrant its so oft repetition; nor is the reason far to seek—but I will not go into that now, but will endeavour to show that in-and-in breeding is not accompanied by such disastrous results as stated, and that bee-keepers need not be alarmed at any such bogey as that; because it is impossible, by reason of their almost universal distribution, for our native bees to be affected thereby, except in a very few instances in the most isolated and remote situations.

Now what are the facts regarding consanguinity, and where indeed would have been our breeds of horses, of cattle, of sheep, of dogs, of fowls, of pigeons, &c., had there been no in-and-in breeding for generations? They would never have had an existence. Did not Mr. Bates produce his famous shorthorns by breeding them in and in for generations? and were not the Bakewell longhorns produced in the same way? and so on throughout the whole chapter with our breeds of dogs, fowls, ducks, &c. But it is amongst pigeons where the results have been so marvellous, since it is generally conceded by naturalists that all our domestic varieties, or breeds, be they Pouters, Fantails, Tumblers, or what, are all descended from the wild Rockdove of our coasts (*Columba livia*). What in-and-in breeding all this represents! And what grand results have been achieved by man's selection amongst all our domesticated animals—all such, at least, whose reproduction is under his direct influence, for where this is not the case no modification of structure has taken place. Cats, for instance, though they are said to be domesticated, being nocturnal animals, their amatory gatherings are outside man's influence; indeed, so far as their mating is concerned, they may be said to be still *feræ naturæ*, and this circumstance is so exactly analogous to the case of our hived bees that any fact or argument in the one case may be taken as illustrative of the other; what lesson then have cats to teach us? This, that while all other domesticated animals have yielded (more or less in accordance with their plasticity) to man's influence, and have given us almost endless varieties, cats have retained their original character, and have not produced a single variety or breed—which they most assuredly would have done had their mating been directly under man's control. In like manner our hive bees, whose mating is also not controlled by man, retain their normal character throughout the whole of our island; and notwithstanding all the care, and skill, and energy, bestowed upon them for centuries, not a single well-marked variety is to be found.

I need scarcely point out how significant these facts are as bearing upon the subject under discussion, nor how unlikely it is, under the circumstances, that our native bees are degenerating through consanguinity. Where, within the whole realm of zoology, is there to

be found a single species in a naturally wild state, be it vertebrate or invertebrate, suffering from too close interbreeding? I can answer the question myself—there is not one. It may therefore be taken for granted that whenever an animal has sufficient freedom to mate naturally, there is no fear of its degenerating from too close interbreeding; least likely is it that bees, which are known to travel long distances at mating time, and it is stated on good authority that drones have been found in hives eight miles from where they were bred, will ever be likely to need the introduction of any foreign blood. Where is there a district so isolated that the bees are not within the reach of fresh blood either from vagrant colonies or from other hives? The answer to this question has been eagerly looked for by queen-raisers, for I believe that none of them have yet found such a place where they could keep their foreign bees pure.

If, then, what I have stated are facts, and I challenge contradiction, it follows that our native bees, being the survival of the fittest, *i.e.* naturally selected, through long centuries of climatic influence, are not likely to be benefited by any cross of foreign blood, more especially if such blood be from a country whose climate differs much from our own. Mind, I am not against a cross if such can be got from a bee in all points *better* than ours, but those who would deteriorate our native bees by crossing them with any degenerate race the foreigners choose to send us I regard as enemies to bee-keepers and bee-keeping. Some, whose ignorance of climatology is truly appalling, have advocated the introduction of bees even from tropical countries. To all such I say, Go to our greenhouses and our hothouses, and see if you cannot learn a lesson there.—F. Boyes, *Beverley*.

CONSANGUINITY.

[1534.] First allow me to thank those who have privately commended my views on above subject in a previous letter, including, I am proud to say, some of the first bee-keepers in England to-day. Secondly, that I have no wish to engage in a wordy warfare with such a knight-errant of the quill as Mr. Webster, feeling sure the pages of our *Journal* should not be crowded with verbiage, interesting only to the parties immediately concerned in the quibble, therefore I shall not follow his letter (1520) *seriatim*. Regarding proverbs, I would also commend to his memory that sensible old proverb which says, 'An ounce of practice is worth a pound of theory,' as also an excerpt from Montaigne's *Essays*, 'I would have every one write what he knows, and as much as knows, and no more.'

Notwithstanding the assurance in which Mr. Webster wrote his previous article, he is now doubtful of success in unearthing or discovering that *rara apis*, the accomplishment of the task he will leave to future generations of bee-keepers, though he went so far as to say that the honey-producing qualities were enhanced in a first cross; one would be led by that to think that the 'coming bee' was at least within measurable distance, that some, with the faculty of hearing inordinately developed, may possibly catch the hum of its wings; but no, the longing hopes are doomed to be blighted, or, at any rate, deferred indefinitely, and we are told to make the best of the bee we now have. Good advice, friend! and we will endeavour to do in the future as we have in the past, tot up a decent little lump of their produce for our next annual show, hoping to have the pleasure (?) of dividing honours with the produce of the Binfield apiary.

It is refreshing among so much theorising to come across a fact. Mr. Webster says emphatically, that a cross between English and Italian bees considerably improves their honey-gathering qualities. Is that where the extra half pound of honey per colony comes in? In lieu, I suppose, for the 7*s.* 6*d.* queen. And in support of his emphatic assertion, he appeals, not to practical experience, but to the tabulated accounts in *B. B. J.* Has it never occurred to Mr. W. that a new strain of bees in an apiary would of necessity receive far greater attention than the colonies there before? And this would account in a great measure for any extra ingathering of honey by that carefully attended colony.

I have never hinted in the *B. B. J.* that I know, by experience, anything about foreign races of bees, except the painful one (to some) of feeling their stings; and if my memory serves me right, Mr. W. has not had a very long experience in the matter, neither on an extensive scale. Mr. Webster mentions among a host of things, '*large* eggs.' We in West Berks fail to get them larger than they were a quarter of a century ago, and, unfortunately, only two-thirds of the number for the same sum; but perhaps it takes *cons* to increase the size of eggs, and our friend is prospecting. Now, does Mr. Webster seriously contend that the Blenheim orange-apple was produced from a crab by the ingenuity of man? That is somewhat on a par with the evolution theory and the jelly-fish—it requires a large faith. Then, as to fancy pigeons, no doubt, each breed has some distinct characteristics of its own, and by crossing the breed may produce a prodigy in shape and colour. But, after all the admixture, the wild pigeon of the forest, left to the instincts of nature, will outweigh it in the scale. And I question if our horses are fleeter now than they were over a century ago, when Matchem and Trajan ran at Newmarket.

Mr. Webster, by his reasoning in pars. 4 and 9, shows the preposterousness of his theory of dire effects, in fact, cuts the ground from under his own feet in asking if I examined every hollow tree, hovel, barn, and cottage, during the three generations quoted in my first example, to be sure that no colony of bees existed within six miles of the apiary. Six miles, friend W.? Where was the old lady's declining apiary in the valley? Was that so isolated that no stray colony was located within a radius of six miles? Where was the pinewood's apiary? Was that in the centre of a forest of fir-trees six miles from an outside? Really, friend, you are arguing against yourself in trying to demolish my simple facts.

As I stated in my previous letter it was solely in the interests of bee-keepers I investigated the above, trusting to allay their fears, raised, no doubt, by Mr. W.'s bogey of in-and-in breeding as likely to produce the almost instant extinction of their strain of bees if their apiary should happen to be at a distance from other bee-keepers; and apparently my arguments and examples have had some effect, for we have got the long distance of six miles now as a bar to close consanguinity. I hope those foul-broody drones or queens (which sex is it that flies six miles *pour amour?*) will not have the staying powers requisite to cover the distance hitherwards. I don't think there is anything in my letter even hinting that I was adverse to the introduction of fresh blood into my apiary; in fact, for several years I have introduced the same by driven bees in the autumn, and often by purchase of stocks in the spring. What I stated, and by examples proved, was the folly of Mr. Webster's examples at the end of his letter (1154), *re* the valley and pinewood apiaries becoming extinct solely from in-and-in breeding. I am afraid the old lady was not a very apt scholar, as Mr. W. says he coached her up *re* ages of queens. Neither did I positively state there was no chance introduction of fresh blood. Still there was none by purchase or design in my first case; but why is my second example (perhaps it is conveniently) ignored? Probably because it is incontrovertible (*vide* par. 4, 1520), from the fact of the early swarming of the bees year after year preventing the chance mating with amorous drones from other distant apiaries, from the simple reason they were not on the wing.

As the plasticity of nature or its products, either animal or vegetable, is entirely beside the question, and

is no more relevant to it than the recent revelations of minute forms of life brought within range of our vision by improvements in the microscope, those forms of life, and probably other and smaller forms, have been existent for ages, though unknown to us; and so in centuries to come bees will exist in same form, shape, and colour, and with same instincts fulfilling their mission in the economy of nature; and I think Friend Webster will bear me out when I assert that neither the wild cherry nor the crab-apple would ever by ages of cultivation produce a 'pippin' in one case, or the 'amber-heart' in the other, except by grafting or budding.—W. WOODLEY.

BIRDS AND FRUIT BUDS.

[1535.] Last autumn I sent a warning note to many publications for fruit-growers to be on the alert for bullfinches, as they were here in unusual numbers. I advised catching them for many reasons in preference to shooting them, and thereby damaging fruit trees, as I know from experience that plum-trees 'bleed' or lose their sap from the shot wounds all the following summer: I have seen the ground quite wet under trees from this cause.

These birds are very easy to catch with properly constructed trap-cages during September, October, November, and December, but after Christmas their nature seems to change, and they will not heed a call-bird during the time they devastate fruit trees. Although I caught no less than sixty of these birds in my garden and orchard, some escaped, and my plum-trees never suffered more, some being almost cleared of every bloom-bud, which, in addition to the more serious prospect of a good crop of fruit being lost, *is a great loss to my bees.* These birds nip off the buds at the rate of twenty-five in a minute, and as they only eat, or rather swallow, just the tiny bloom, it takes an enormous quantity of buds to make a meal: thousands are lying under my trees; and as each bud would produce several blossoms the loss to bees is apparent.

Sparrows are almost as bad as bullfinches on plums, gooseberries, and currants, but these are easier to check with soot, and lime, and cotton, on trees. In catching bullfinches, tom-tits (*Parus major*) frequently shut themselves in prison, but I generally release them. I have taken three in ten minutes from one trap-cage this winter. My great objection to these birds is on account of their pea-destroying—not bee-killing—propensity.—J. HIAM, *Astwood Bank, Redditch, March 8th.*

MORE ABOUT THE CO-OPERATORS.

[1536.] In the *B. B. J.* for Sept. 1st of last year I gave a sketch of my adventures 'Amongst the Co-operators,' remarking, in closing, that what I saw was only a an earnest of greater things to come. This year the show is to be at the Crystal Palace on August 18th, on a scale that promises to assume colossal proportions.

The title is, 'The National Co-operative Flower Show,' and the motto (the old Cornish one), 'One and All,' must be taken to mean one and all co-operators, so those of us who are not co-operators had better become so at once if we wish to compete, or by-and-by our only fate will be to 'look and weep.' The prize list in money and kind is some 320*l.* The portion offered in the 'honey' classes represents about 10*l.* 10*s.*, besides the silver and bronze medals of the B. B. K. A.

Co-operators are exclusive and conservative, as well as 'fair traders.' You must sow only 'co-operative' seeds, grow only 'co-operative' flowers, fruit, vegetables, and HONEY—I had nearly forgotten the latter—and be a 'co-operator' yourself, or you may not compete for these prizes. Of course the bees were always 'co-operators,' and profit greatly by the arrangement.

Co-operators are 'cute, 'cute enough to be a company of Celts. Here is a wrinkle for secretaries who are getting up a prize list. Of the general section I will say nothing, as that does not concern us so much as the honey classes. Amongst the 'special' prizes I find the following:—One silver and one bronze medal, presented by the B. B. K. A., and two vols. *B. B. J.*, presented by the Editor; the veteran firm at Southall gives a 'Gayton' hive; Mr. Howard, one of his new patent 'feeders;' Mr. Meadows, an extractor and a dozen section show-cases; Mr. Baker, of Muskham, two hives; Messrs. Breffet & Co. and the Aire & Calder Bottle Company give 12 doz. honey bottles each; Mr. Parker gives 3 doz. honey tins; Mr. Pearson, 1 doz. 1-lb. sections of honey; Mr. Simmins, six copies of his new book, *Modern Bee-farm;* Mr. Jenkins, one of his section crates; Mr. Hutchings, a feeder, a fumigator, and a section-rack; the B. B. K. Stores, 1 doz. 'Woodley' section-cases; and 'Expert-in-Chief' Baldwin, a smoker, feeder, and 2 lbs. foundation.

Now this list means either that these various manufacturers of bee-gear who have contributed so liberally are co-operators, or the energetic Secretary of the show is good at carrying 'round the hat.' Live and learn!

I wish them all a good show, a fine day, plenty of competition, crowds of visitors, no speech-making, and a *bee-tent.* I hope the latter will not be omitted as I shall like to be amongst the bees if I go, as I hope to. But I am running on too fast, there will of necessity be—

> 'Co-operative bees, in a co-operative hive,
> With a co-operative expert to show 'em alive
> To a co-operative crowd, at a co-operative fête,
> Where only co-operatives are allowed to compete;'

and I am not a co-operator, and as a matter of fact only an—AMATEUR EXPERT.

RESCUING DROWNING BEES.

[1537.] In windy weather in spring many bees are blown down in crossing a pool in my garden, and as I feel sorry for them I rescue them from an untimely end by procuring some hot water in a bucket over which I place a cooking colander, into which I put the bees to drain and warm. I find a slate lath six or eight feet long best to place under them, as the hooked feet of the bees cling to the rough wood, and half-a-dozen may be lifted at one turn, a smart tap of the wood shakes them off. After draining they soon recover if placed on something warm in the sun, and fly off to their hives. I rescued at least fifty to-day at one time.—J. HIAM, *Astwood Bank, Redditch, March 9th.*

FINDING THE QUEEN.

[1538.] I can fully endorse what 'Snowdrop' (1508, page 118) says in respect to time test. I have kept bees nine years, both in skeps and frame-hives, and have driven a large number at various times, both for myself and others, and have tried to find the queen in open driving, but have never found her yet, not that I don't know a queen when I see one; perhaps, my eyesight is not so quick as some people's, and having to wear a veil will impede my sight as well. So if finding the queen is one of the conditions to gain a third-class certificate, I have faint hopes of ever gaining one. I have taken the *B. B. J.* since 1885, and read them all through every week, and have learnt a great deal by the suggestions and practical experience of correspondents. No. 1512, page 119, advises candidates to repeatedly practise driving and picking out the queen previous to his examination, which suggestion is very good for those who have time to do it; but a working man that is away from home from morning until night all the week through has not the time to spare, morning and evening not being always fit for driving.—J. B., *Sheffield.*

NOTICES TO CORRESPONDENTS & INQUIRERS.

C. N. Parkin.—*Simmins' Large Frames.*—I think of adopting Mr. Simmins' large frames, but would like to know, if Mr. Simmins would kindly inform me, 1. What equivalent is there for *tiering up* so as to obtain the same results as are obtained with the forty-frame colonies? In other words, can one's stock of Standard frames be used in any way for extracting whilst using the large frames for brood-nest, single-walled tiering hives being in use. 2. How are the large frames extracted from? The ordinary extractors would not be large enough. 3. Would empty body-box be required below frames in summer, or would the large size (perpendicularly) of brood nest suffice to prevent swarming?

Reply.—1. The shallow extracting chamber of eight frames is used for extracting, tiering up as high as needed. The same with usual Standard frames, using an extra rim to bring the sides of your hive up to level of large frames; then pile up the standard hives of comb. 2. If the above is properly carried out there will be no honey in the large frames to extract. 3. Use several large frames in front or at one side (nearest entrance) with starters only.—Samuel Simmins.

C. A. J.—*Bees Dead.*—Your stock, since dead, having worked forwards, and a spell of cold weather intervening, were unable to shift the cluster to the back of the hive so as to get to the stores there. Had you cut winter-passages through the combs, it is quite probable your bees would have been saved. Six frames well stored would have been ample. An enamelled quilt would have been preferable to boiler felt for placing next the frames. Of course any necessary candy can be placed on the frames as desired. We believe stocks generally are very short of food this spring. Ours got their first pollen on the 10th; the crocuses were filled with them.

Geo. Murrall.—*Dry Sugar Feeding.*—Castor sugar is quite useless for dry feeding. If Porto Rico cannot be got, we should certainly prefer syrup, though the former is better for stimulating in spring.

Jackdaw.—1. *Silke-Corkhill Hive.*—We see no reason why this hive should not be a success. We have knowledge of a very similar design having been tried successfully. Your alteration of entrance would possibly be an advantage. 2. *Malt-wort for Feeding.*—We consider this most improper food for bees. Sugar is cheap enough. Our advice is, never try doubtful substitutes, it may mean death to good colonies. 3. Kindly repeat your other question.

W. M.—1. *Colour for Hives.*—Try plinths white, red, green, brown, blue, alternating the various colours in different groups. These colours will give you sufficient diversity for a large number of hives. 2. *Honey Flow.*—There is said to be a honey flow when large quantities of bloom are freely distilling nectar and stocks are gathering considerably more than they consume. 3. *B. B. K. A. Library.*—The annual subscription to B. B. K. A. of 5*s.* includes free use of Library. Mr. John Huckle, Kings Langley, will receive subscription and forward you catalogue. Any of the books named therein can be borrowed by members. Borrowers to pay cost of postage both ways.

S. B. Fox.—*Floor-boards.*—For the purposes of cleaning floor-boards, it is better to have them moveable in the ordinary Woodbury hives; but for larger hives fixed boards are preferable: in this latter case, when required to clean the boards, the frames can be moved from one end to the other.

W. A. Trussler.—You should get pollen from elms, chestnuts, &c., and honey from hawthorn, and limes, also trifolium. But success lays quite as much in the management as the surroundings. Get your colonies as strong as possible by May 10th.

W. L. Bird.—*Drone-brood.*—We should consider the queen useless, as you mention there being *no worker brood.* We should remove the queen and unite them to one of your weak stocks, then you could divide them again early in May, as soon as you can obtain a queen to introduce. They will die off if left alone.

John Stuart.—We are of opinion that there is no law by which your neighbour can compel you to remove your hives; but if your neighbour is disturbed and disquieted by the presence of your bees, we think it would be but courtesy to place them where the annoyance would cease. If 'A. E.'s' motto, *Mel sapit omnia*, be correct, perhaps a present of a section or so of honey might heal the strife. Try it.

Jo Rodo.—1. *Hiving Swarm.*—Six frames are enough, and feed gently if honey is not coming in freely. If there is a good honey-flow, and the hive holds ten or twelve frames only, then put in all the frames with ½-inch starters *only*, and place the supers on at once, giving full sheets in the section boxes. The bees will store above, and gradually build out comb in the frames, which the queen will keep filled. It would be safer to put excluder-zinc on the frames. Set the swarm on the stand of the old stock. 2. *Box Hive.*—The time of the first honey-flow varies in different places. If you have plenty of hawthorn or clover in your neighbourhood, super as soon as either of these is opening freely. We should prefer to put a frame-hive underneath, with full sheets of foundation in the frames. Then, as soon as the queen is laying freely below, put excluder-zinc between the two hives, so making the old brood-box a super for extracting at the end of the season. For the future you will then then be able to examine as may be advisable.

F. Goodrich.—*Transferring Bees.*—Under the circumstances, yes, on first suitable day. You might, however, replace coverings with clean, dry ones in a very few minutes. Do not use smoke if you can possibly avoid it when changing the quilts. As you turn up those now on, let the new *warmed* ones gently take their place. You can slide them correctly into position at the last. We will inquire about the trap.

Blanche, *Vaucluse.*—1. *Keeping Hive-sides Packed.*—We keep ours packed with cork-dust (that in which grapes are packed) all the year round, and find it answer admirably. Reduce the number of the quilts, give free ventilation and wide entrances. A penny placed under each corner of a hive having a loose floor-board gives good ventilation. Your hives should be shaded from the midday sun. 2. *Irregular Combs.*—Combs with brood must not be pared down. As soon as the double comb has the brood sealed, place it at the outside of those which contain brood, putting a good, straight built-out comb in its place; when the brood hatches, remove it altogether. Gradually work the other irregular ones out in the same manner. As soon as you get two good, straight combs in the centre of the brood-nest, you can about once a-week insert a frame with sheet of new foundation instead of a built-out comb. This is called spreading the brood-nest. 3. *Unsealed Food.*—Considering your bees are so strong, and are bringing in pollen freely, the frame you refer to is most likely food they have liquefied for feeding the brood. 4. *Propolised Frames.*—If your bees are not vicious, you had better scrape them at your first opportunity. 5. *Moving Bees into Clean Hives.*—Unless the hives are really dirty the spring shift is sufficient, but another shift in end of September would keep them nice. 6. *Weak, Queenless Stock.*—Unite them to your other stock, and divide, say, in about four weeks' time. The other subjects of your letter will be treated next week.

Robin Hood.—*Disinfecting Hives and Combs.*—There is no utility in disinfecting the hives and combs unless

disease has appeared in them, or they have become a fertile source of the growth of disease by becoming dirty, damp, and mouldy. A hot disinfectant in the case of hives is more effective than if applied cold, as it enters more freely into the grain of the wood and crevices; carbolic acid is the best for this purpose. Dipping the combs into the disinfectant would have the desired effect, but they must be drained and allowed to dry before placing them in hive. Spraying would be equally as effective if done properly.

A. H.—*Trapping Drones.*—Where a hive is abnormally populated with drones we should trap them, but such a condition of things cannot take place in a frame-hive if same has been properly attended to. Drones do not act the part of nurse-bees; this is principally performed by the young bees before taking their place among the army of honey-gatherers. 2. *Queen's Cage.*—We did not make the offer, but one of our contributors. This offer, we believe, has been withdrawn. 3. *Removing colony from makeshift hive.*—This can be done on any fine, warm day by simply removing the frames and placing them in the fresh hive, which must occupy the position vacated by the makeshift. 4. *Removing stock from box.*—You must drive them, or at least a portion of them, with the queen. The vacated hive is then placed upon the tops of the frames of the fresh hive, a sheet of excluder zinc being placed between them. The queen with bees are then turned into the lower hive, which must be fitted with sheets of foundation in about four or five frames, the dummy board being shifted right close up to them. All means of communication between the upper hive and the outside excepting through the excluder zinc, must be stopped up. The bees with queen will draw out the foundation in the lower while those in the upper hive will hatch out the brood contained therein. In three weeks the upper hive must be removed and driven, the bees being turned into the lower one. 5. *Ventilation of hive.*—This is only necessary where a colony is very populous if you have an entrance all along the front. You must raise outer case as well and stop up space between the inner and outer case, or the bees will most likely build comb between them.

J. C. Waltham.—*Dividing Colony.*—On no account must you raise a queen in a nucleus colony as proposed by you. By dividing a colony you materially reduce the chance of a good honey crop. You cannot expect a large increase of stocks and a heavy return of honey at the same time, but if you require two colonies act according to the directions of the book you have or purchase another.

Received from Mr. F. C. Andreu, of Port Mahon, Minorca, the Catalogue of Hives and Bee-appliances.

Received from Abbott Bros. their Catalogue of Hives and Bee-furniture, 72 pages, illustrated with numerous wood engravings. In this catalogue the bee-keeper will find every appurtenanee he can possibly require, and at very moderate prices.

Sending Queen-cells.—I beg to thank Mr. Pringle for his generous offer (1507), which I shall be very pleased to accept.—A. Sharp, *The Apiary, Huntingdon.*

Erratum.—In 'Echoes,' from 'J. F. R. A.,' line 8, it should read, 'Each was fed up to 25 lbs. in October, and has now a one-pound candy cake over the feed-hole.'

Business Directory.

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Editorial, Notices, &c.

THE PROSPECTS OF BEE-KEEPING.

Many of our readers who can recollect the pleasure derived from selling honey in the comb at 2*s.* per pound doubtless feel very despondent at the continued diminution in the price of honey, and probably some are sufficiently pessimistic to not only think but say that the production of honey in the future may, perhaps, be an elegant hobby, but certainly never a paying business. Looking at the subject in all its bearings we beg to take exception to this view, and at the same time to impress upon our fellow bee-keepers that at no previous time have the bee-keepers' prospects been of such a roseate hue as at the present. Till within the last few years honey of *good* quality was a very scarce article to be found only in the houses of the well-to-do, and but as a medicine even there. Now it is fast becoming a necessary requisite of the breakfast and tea-table; consequently the demand is rapidly increasing, and if honey-producers will only use their utmost endeavours to keep their honey clean, and at the same time put it on the market in an attractive form, we are of opinion that within the next decade there will be a ton used for every hundredweight now consumed. We would point to the jam trade as a collateral case. Within the memory of many who would resent being designated as old people, fair jam was 10*d.* to 1*s.* per pound; now the same quality can be readily purchased at 5*d.* retail. Then only one, or at the most, two grocers in a town kept it, and those only to a small extent; now every grocer's shop, though of the most modest pretensions, even in out-of-the-way villages, has an exhibit of jam as one of its leading articles. The firms who years ago made large prices of a small quantity now thrive far better on a larger sale at half the price. It is admitted they have many facilities for procuring several of the articles they require at a much lower figure, but labour is dearer. The bee-keeper occupies a very similar position as regards the cheaper prices at which he can obtain the necessary outfit, and it only requires the actual facts of the case to be clearly understood and fairly grasped to enable us to achieve as great a success as our most ardent wishes could desire.

It is an indisputable fact that taking, say ten average seasons together, there is no other pursuit in which small capital can be invested with the prospect of such large returns, if the bee-keeper will only remember that it is quite as necessary to thoroughly master this business in all its details as it is for the professional man or tradesman to master theirs when they aim at success.

At no previous time has it been possible to purchase the hard-earned knowledge of others in the form of books at so cheap a rate as now. Improved methods of management, &c., are freely communicated and most valuable hints scattered broad-cast on every hand. This should give encouragement to the faltering and brighter hopes to those who have attained to some measure of success.

We fail to see why, if the price of extracted honey should not in the future exceed sixpence per pound, it would not be possible to make bee-keeping pay even with a few hives. At that price every hive ought with care to give the owner a profit of at least a sovereign either by the quantity of honey alone or by the honey and a swarm combined. This is putting it at a most moderate figure. Our most successful bee-keepers are persons who are always on the alert for anything which shall conduce to the well-being of their bees with a view of fitting them to be better producers of honey. It is needless to recapitulate here the several things that go to make success, because the owner himself is the most important factor in the calculation. It is of no use his knowing what should be done if he does it just too late. Let him work never so hard to attain success his efforts will be fruitless.

In conclusion, we would say be every ready and watchful, diligently accumulating knowledge at every opportunity, manfully meeting every difficulty and fully determined that no obstacle or disappointment shall divert you from your purpose. Then shall success be your reward if your work is intelligently carried out.

PRACTICAL HINTS FROM COUSIN JONATHAN.

Amongst American bee papers, for practical information the *American Apiculturist* bears the palm. At intervals of a few months an extra-good number comes from the desk of Mr. Henry Alley. The number for March is so exceptionally good that I have condensed

the following hints from it—which is always a difficult matter—and do justice to the writers at the same time. Several other subjects were treated on, but I have selected what I thought would be of most interest to readers of the *B. B. J.*

Mr. R. L. Taylor aptly remarks that 'many men have many minds,' and this is as true of bee-keepers as of any class; and while we have many likes and dislikes as to hives, appliances, and systems of management, yet we may all learn something from the 'hints' given by others, although we may not be prepared to slavishly follow their systems.

BEGINNERS

should start with two or three hives, and learn by experience and amid comparative leisure. To produce large crops of honey they must learn to get their

COLONIES STRONG

as early as possible. The one great pre-requisite for this is superabundance of stores. Spreading brood he considers of doubtful utility. If the bees are supplied generously with stores, the

NON-MEDDLING POLICY

will result in a healthy and rapid increase.

Mr. J. E. Pond prepares for the harvest during the winter by getting hives and appliances ready for summer's use. In the spring he examines and cleans out the hives and

EQUALISES HIS COLONIES

as far as possible. He gives the weak colonies brood from the strong, unites the queenless to others, but prefers building up weak colonies with good queens at their head, to uniting together those that are

NOT QUEENLESS.

Colonies must be well supplied with food, and the inexperienced is warned that the consumption of food is very great during early spring breeding, and colonies are 'liable to play out rapidly for the want thereof.' The

REARING OF YOUNG BEES

must be timed to take advantage of the crop. From thirteen to fifteen days are given as the age of the young bees before they become foragers. The golden rule of Otto—'Keep all stocks strong'—is as true as ever, remarks Mr. Pond, which many are apt to forget in these days of

PATENT RATTLE-TRAPS,

and put their dependence in 'wonderful back-action, incontrovertible, interconvertible, interchangeable hives; but it won't do. The only honey-gatherer is

THE HONEY BEE.'

Mr. G. M. Doolittle says all work with the bees to be successfully done should be done with an eye open to the probable time of the blossoming of the

MAIN HONEY PLANTS

in one's locality. It takes six weeks to build up a colony to a state capable of doing its best work on a given field of blossom, consequently you should time your operations according to your crops. To commence too soon is to have large numbers of bees loafing around waiting for the harvest, while being too late gives you consumers instead of producers. The bee-keeper must use

COMMON SENSE

in regard to bees as in other things, not only by rightly timing his breeding operations, but by using the best races of bees, and the best of queens from that race, as all

DEPENDS ON A GOOD QUEEN,

as far as the bees are concerned, and on the amount of brains possessed by the owner, to realise that no stone must be left unturned that tends towards success if he wishes to make his bees a

SOURCE OF PROFIT.

Mr. Joshua Bull says, although we cannot compel, we can stimulate bees to rapid breeding by amply providing for their needs during spring, and keeping them warm, comfortable, and happy. He keeps

A RECORD

of all his colonies, numbering the queens, and painting the number on a piece of tin, which he fastens to the hive that contains her, shifting it to other hives if she swarms or is shifted by any other means. His

SPRING MANAGEMENT

consists in overhauling each hive when weather permits, taking away the unoccupied combs, seeing that they have plenty of food, cleaning out the hive, closing up the dummies, and filling in the outside space with dry chaff or sawdust, giving dry quilts, and over the quilt laying an *old newspaper*, to retain the heat, contracting the entrance and recording the

CONDITION OF THE STOCK

in his note-book and the date of examination. Mr. Bull, unlike Mr. Taylor, does believe *that the spreading of brood, with judicious management, may be productive of highly beneficial results.** The greatest danger lies in the liability of extending the brood beyond the capacity of the bees to keep warm during any period of cold weather which might occur.

WHEN TO SPREAD BROOD

can only be learnt by discretion. It is an easy matter to handle bees to death in the spring of the year by continually fussing with them, by overhauling them to see how they are getting along just to satisfy curiosity. Always choose

A WARM DAY

for examination, so that the bees can fly during operations; and the best judgment of the apiarist must be constantly exercised as to how much room, and when it should be given, and every change in the condition of the colony should be

NOTED DOWN IN THE BOOK

spoken of above.

It is difficult to specialise where all is so good, but Mr. Bull's article on spring management is excellent reading throughout.—AMATEUR EXPERT.

(*To be continued.*)

Selected Query.

[5.]—*Which is the best way of preserving combs from wax-moth and keeping them over the winter? What should be done with the pollen in them?*

1. Leave them in the hive. 2. Pile up body boxes, filling them with frames of comb so they stand about ¾ in. apart. 3. Provide a large comb cupboard and space as in No. 2. With the latter, provision is made for burning sulphur or live coals in a pan at the bottom, if found necessary, but this is seldom required if the combs are used the following spring. Leave the pollen alone. —SAM. SIMMINS.

Suspend them separately in a dry, airy room, and leave the pollen alone; it will become dry and will keep. In the spring, copious moisture with thin, warm syrup will make it again available for the bees.—C. N. ABBOTT.

Combs of one or two years old, from which honey has been extracted, if not containing over-much pollen, may be immersed in water for an hour or two, and again

* Italics mine.—'A. E.'

passed through the extractor, when, after being sprayed with thin syrup, and cleaned by the bees, they may be fumigated with sulphur and stored in boxes in a dry room. Many prefer to encase such combs in sheets of paper in order to preserve them from the moth.—GEORGE RAYNOR.

All combs should first be thoroughly cleaned out by the bees of any remaining honey after extracting, and in the bodies used for storifying be fumigated with sulphur fume or carbolic acid spray. All joints and openings being made secure from insect life, these bodies may be stored in a dry room, or manipulating-house, tiered any convenient height. In *small* apiaries, after cleaning and fumigating, spare combs may be nicely stored in a box, with close-fitting lid, sufficiently large to take two or three frames deep by any length needed. The frames therein hang on moveable strips, so that the box may be filled from the bottom upwards. Brown paper lining to box, with sheet of same on top, each tier will repay the extra trouble. This winter we have kept combs in very good condition storified over colonies, the necessary quilting, &c., over latter, shutting off all communication above. Small quantities of pollen may be left and given back to the bees with no bad result, but if combs are largely pollen-stored, it is well to scrape all such pollen-cells away, leaving the midrib only. Many of our attempts to otherwise rid combs of pollen have proved futile. All spare combs which are excessively pollen-stored it is best to break up and replace with a full sheet of worker foundation.—JOHN H. HOWARD, *Holme, Peterborough.*

I tier my spare combs up in spare hives, and occasionally blow some smoke in at the bottom. If there is a moderate quantity of pollen in them, I let them remain; if they are rather full of it, and I do not wish to destroy them, I just scrape them down a bit before giving them to the bees.—JOHN WALTON.

I cannot recommend the keeping of surplus combs containing pollen over the winter. What could be better than a close-fitting box, either of tin or wood, to keep the combs free from wax-moth? A piece of camphor should be put in the box.—J. GARRATT.

All combs to be kept through the winter should, after extracting the honey, be given to the bees to clean, and for this purpose they may advantageously be placed behind the back dummy of a needy colony, raising the dummy ¼ in. for passage. Combs containing much pollen should be given to stocks which are being fed up with syrup, or broken up for wax. When thoroughly cleaned and dry they should be carefully tied up in paper, putting a small piece of camphor in each parcel, which will keep away the moth, and hang them at the top of a dry, airy room. Any little pollen in the combs thus treated may be left, and when given to the bees they will soon decide as to whether it is required or not.—S. J. BALDWIN.

Let the combs be perfectly dry and clean when ready to put away. Hang them in a warm, dry store-room, so that the air can circulate round them, but protect them from dust and insects. Any pollen soon becomes dry, and the bees clean it all out when the combs are given to them in the spring. I have never found any difficulty in keeping combs in this way, and I always spray them with sal. acid solution, as advised in the *British Bee-keepers' Guide-book*, before giving them to the bees.—M. L. GAYTON, *Much Hadham.*

Combs should be cleaned by the bees after the honey is extracted, the frames should be scraped clean and hung in racks about two inches from centre to centre, and several rows in height, in a dry room or cupboard that can occasionally be fumigated with sulphur. If there is a quantity of dry, hard pollen in the combs I should melt them down.—JOHN M. HOOKER.

Keep them freely exposed to the air, or wrap them closely in brown paper parcels, putting a little camphor in each. Do not interfere with the pollen.—J. A. ABBOTT.

Presuming the query refers to combs that have been through the extractor, and cleaned out afterwards by the bees at the end of honey season, I should store them in a dry room or chamber where facilities for hanging them in same position as when in hive, or they may be stored in the storifying compartment of the hive in a dry room; when the pollen in them gets perfectly dry a great part will shake out, and the remnant may be left to the bees for clearance.—W. WOODLEY.

A REVIEW OF THE BEE LITERATURE OF GERMANY AND AUSTRIA.

(*a.*) *Nordlinger Bienenzeitung, Editor, W. Vogel, forty-fourth year. No. 4.*

The most active contributor to this, the oldest of all bee journals since its commencement is Dr. Dzierzon, the grandmaster of bee-keepers. As usual the number referred to commences with an article by Dr. Dzierzon, entitled 'The Hive Question,' in which the author discusses the bees' power of acclimatisation, which enables them to thrive in very cold countries and exist even in high northern latitudes where the winter is long and severe; it is even said that colonies of bees have been discovered in the rock-caverns of Iceland. Although this seems incredible, we have authentic accounts of the possibilities of bees existing in an arctic climate. In south Iceland there are some sheltered fertile valleys, where during the short summer months the heat becomes very great, and where the bilberry and other arctic plants grow in profusion. The shortness of summer is compensated and equalised by the length of the arctic day, thus giving time for bees to collect and store sufficient honey to last them through the long winter.

As a protection for the roots of plants against the extreme cold in winter kind Nature covers the ground there with a soft covering of moss, which, at the commencement of winter is overlaid by a thick layer of snow, below which the temperature generally remains stationary at about freezing point, whatever temperature the thermometer may indicate above the snow.

The maximum of the climate of Iceland in summer is 26° R = 90½° Fahrenheit; the minimum in winter —20° R = 13° Fahrenheit below zero. The duration of the longest days there is twenty to twenty-one hours, and of the shortest four hours. Enormous tracts of country are covered with heath and bilberries, which ripen in September.

The same number of this *Journal* contains an interesting account of 'The Importance of Honey to the Ancients,' from the able pen of Mr. Bessler of Ludwigsburg, the well-known author of *Geschichte der Bienenzucht* (History of Bee-keeping), a work recently published. A further article refers to Mr. Ludwig Huber, who died at Niederschopfheim in the duchy of Baden at the age of seventy-four. Shortly before his death Huber's popular and extensively read work *Der Dzierzonstock* (The Dzierzon Hive) appeared in its tenth edition. The latter article is illustrated by a portrait of Huber.

(*b.*) *Deutsche illustrierte Bienenzeitung. By C. F. H. Gravenhorst, fifth year.*

The February number of this *Journal* contains a charming article on Flowers and Bees, by Miss Sophie Warnken, entitled 'The highest intellectual Enjoyment,' the authoress concluding with the remark that he who wishes to experience an intellectual enjoyment should 'at once commence bee-keeping, a hive of bees affording a never-failing source of pleasure; as one watches their labours in the flower-garden, or in the woods and meadows.' Then follow articles on the 'Bogenstülper

at the Upper Rhenish Industrial Exhibition at Freiburg in Baden, by Mr. Roth, and 'The Dathe Hive' by Mr. Dathe of Eystrup. It will be in the recollection of bee-keepers that the latter hive, containing three storeys in which the frames have a width of 23·5 cm. = 9¼ inches, was adopted as a standard for fixing the measurements of bee-hives in Germany.

(*c.*) *Deutscher Bienenfreund, by L. Kraucher, twenty-fourth year. No. 3.*

Mr. L. Stachelhaussen of Selma, Texas, gives a description of 'The Construction of the Langstroth Hive,' as suitable for use in summer. He is decidedly in favour of hives that can be manipulated from above. Mr. H. Rabes, Secretary of the Niederhasslau Bee-keepers' Association, gives a short 'Explanation in reply to Mr. Koerbs,' with regard to this gentleman's new invention of artificial combs—a general subject of conversation among bee-keepers at present. Is this artificial comb likely to prove useful and of real advantage in practice? The future will show.

(*d.*) *Die (württembergische) Bienenpflege. Editor, Mr. Baelz, tenth year.*

No. 1 contains an article on 'Honey' from the *Letters on Diet*, by Dr. Joh. Aug. Schilling, in which the author gives an accomt of what has been written about it, and its use as a food and medicine.

(*e.*) *Bienenvater (wien). Editor, Mr. Verages, twentieth year.*

No. 2 of this *Journal* contains a very interesting and instructive article by Mr. E. Drory, entitled 'From my Diary,' being notes on bees during a trip round the world. The most entertaining of these are dated from the island of Ceylon, where the learned naturalist made observations not only on the various kinds of bees, but also on Meliponas and Trigonas, in the propagation of which he displayed so much skill and perseverance during the time he was editor of the *Rucher* at Bordeaux.

(*f.*) *Bienenwirtschaftliches Centralblatt, Hanover. Editor, Mr. Lehzen, twenty-fourth year. No. 3.*

This number reproduces the speech made by Mr. C. Lützow at the second bee-keepers' meeting on 'The Eyes of the Bee,' illustrated by numerous drawings. In another article entitled 'A Lawyer's opinion on the Act of Parliament of May 14, 1879, respecting the traffic in articles of Food and Drink,' Mr. Letocha expresses himself satisfied that the provisions of this Act afford sufficient protection to bee-keepers and the consuming public, as by its enactments the former are very well able to defend themselves against dealings in spurious honey, and the latter against dishonest tricks on the part of producers and sellers of honey.

(*g.*) *Oesterreich-ungarische Bienenzeitung. Editor, Father Schachinger, eleventh year. No. 2.*

The Rev. gentleman whose honey aërometer has been declared to be a failure in his leading article in this number defends his invention, saying that no reliable experiments have been made to justify this assertion. Mr. Franz Zavadil recommends the manufacture of artificial combs with square cells.

(*h.*) *Leipziger Bienenzeitung, published by Liedlohf & Co., third year.*

No. 2 of this *Journal* contains a description of the 'Twinstock Hive, the most suitable bee-hive of all,' by Dr. Dzierzon, followed by a continuation of the 'History of Bee-keeping.' The same number also reproduces some forest regulations which were in force in parts of Germany during the sixteenth and seventeenth centuries. There is also an article, headed 'Formic Acid in Honey,' in which the writer endeavours to prove that this acid is a product of oxidation of the carbhydrates of plants.

(*i.*) *Allgemeines deutsches illustriertes Bienen-Organ, by Mr. Felgentreu, third year.*

No. 2 contains a description and illustration of the Alberti hive, by A. Alberti. This hive is an oblong box, one of the broadsides of which is accessible by doors, while all the other sides are fixtures. The frames are resting on a grating, and are kept at the proper distance from each other, and from the walls and doors, so that when the doors are removed, the frames are perfectly free and may be turned to and fro. It is also possible to take out of the hive any frame which it may be desirable to remove.

(*k.*) *Die Honigbiene von Brünn, twenty-second year. Editor, Mr. H. Rull.*

In No. 2 the editor publishes extracts from Mr. Dennler's work *Das Bienenwachs* (Beeswax), on the subject of adulterating and testing wax, and the employment of wax for industrial purposes.

(*l.*) *Münchener Bienenzeitung, tenth year. No 3. Editor, Dr Haulver.*

In this number dronetraps are described as dangerous appliances which should not be used in the apiary on any account, as they frequently cause the loss of the queen.—Dennler, *Enzheim, in Alsace.*

ASSOCIATIONS.

IRISH BEE-KEEPERS' ASSOCIATION.

Annual Report.

The Committee have much pleasure in reporting satisfactory progress during the past year in spreading a knowledge of advanced methods of bee-keeping, and in the work of the Association generally. The number of members has also very largely increased, the total being now 141, as against 85 in 1886. In spite of the injurious effects of extreme drought, the year 1887 has been marked by an exceptionally bountiful honey crop. This, however, has had its usual drawbacks, in the shape of dull demand and low prices. Under these circumstances the Association may be congratulated on the results of the market established for the sale of members' honey; and great credit is due to Messrs. Carton Brothers, the agents, to whose unremitting exertions the large measure of success attained is mainly due.* The bulk of the honey sold was in the form of one-pound sections. Two-pound sections are most unpopular, but the few sent were all disposed of.

Extracted honey, being apt to candy rapidly this season, found so little favour with the public, that the supply had to be stopped, but consignments already received were sold at an average price of a little over 8½*d.* for 1-lb. bottles, and about 4½*d.* a lb. for honey in cans. Better results may be hoped for hereafter, if individual members will join with the Committee in combating the prejudice against candied honey, which even now is not universal.

The average price of 1-lb. sections, taking good and bad together, was a little over 7*d.* For good sections the following prices were obtained:—From January to June, 9*d.* to 1*s.*; July, at first, 8*d.* to 8½*d.*, decreasing, as the month advanced, to 6*d.*; August, 7*d.* to 8*d.*; September to December, 8*d.* to 8½*d.*

The sale of honey during the year 1887 was,—1-lb. sections, 3814 lbs., 111*l.* 17*s.* 11*d.*; 2-lb. sections, 70 lbs., 1*l.* 11*s.* 4*d.*; 1-lb. bottles, 403 lbs., 13*l.* 17*s.* 6*d.*; honey in cans, 76 lbs., 1*l.* 9*s.*—Total, 4363 lbs. 128*l.* 15*s.* 9*d.*

An important exhibition of hives, appliances, and honey, was held early in August in the Salthill Gardens, near Dublin. The hives and appliances exhibited—which were, with one exception, from Irish makers—

* Messrs. Carton Brothers have now resigned the Agency, which has been taken up by Messrs. Abbott Brothers.

were calculated to give encouragement to those who have the interests of home industry at heart; but the almost entire absence of British competitors materially diminished the receipts from entrance-fees, and was disappointing, as ample notice of the show had been given to all the leading firms.

The display of honey was large and attractive. A considerable amount was sold at the show, and, whenever exhibitors desired it, the unsold portions of their exhibits were forwarded to the Market and disposed of there.

There was a very satisfactory attendance at the bee-tent, where Mr. Roland Green, the well-known expert of the British Association, excited much interest by a highly instructive course of lectures and skilful manipulations.

On this occasion every effort was made by the employment of military bands and other attractions to draw public attention to the show. The result was a fair attendance, though by no means such as had been expected, and also long and highly appreciative notices in the Dublin papers. By these means it is believed that the position of the Association has been greatly improved, as evidenced by the largely increased number of its members. The expenses, however, were heavy, but, owing to the kindness and liberality of some of the members in subscribing to a guarantee fund, they have not, to any important extent, exceeded the resources of the Association. On the evening of the first day of the show, a Conversazione was held, by kind permission of Dr. Traill, at his rooms in Trinity College. There was a good attendance of members, and Mr. Roland Green was also present. An important paper was read by Mr. M. H. Read, and an interesting discussion followed.

The bee-tent appeared also at a flower-show at Waterford, and at the Meath Poultry, Pigeon, Cage-bird, and Bee Show, held at Trim, having been hired on each occasion from the Association.

A noteworthy feature of the year was the adoption of a standard hive, capable of being manufactured cheaply. Of this a full description has already appeared in the *British Bee Journal*.

The Committee met on the 6th inst. President, Rev. P. Kavanagh in the chair, Dr. O'Farrell, Messrs. Millner, Vanston, Read, Sproule, Gillies, and the Hon. Secretary. Steps were taken for the due application of the Cottiers' Fund. It was resolved to request certain members to act as district secretaries for the counties in which they reside. Important changes in the system by which honey is sold for members were reported by the Secretary.

GLOUCESTERSHIRE BEE-KEEPERS' ASSOCIATION.

The annual general meeting of this Association was held at the Raikes Memorial Hall, Gloucester, on Thursday, March 8th, 1888. Present:—J. Hutchinson, Esq. (Chair), Miss Hayward, Messrs. H. M. Appleton, E. A. Brown, J. B. Butler, T. Butler, C. Marshall, Jun., W. H. Fox, C. M. Penley, W. D. Slade, Hon. Sec., with others.

The Annual Report was read as follows:—

The Committee have much pleasure in submitting their report for the year 1887, and to congratulate the members on the progress the Association has made in the increase of subscribers, and, too, in the amount of receipts, of the interest taken, of the marked improvement in the method and practice of bee-keeping in the county. There are now 266 members, divided into 13 districts, with two more districts about being formed, viz., Wickmar, Hatherley, and Churchdown. The gross receipts amount to the sum of 118*l.* 1s., and the Committee are glad to state that they carry forward a favourable balance in the Treasurer's hands after providing various appliances, such as hives, extractors, &c., which have been greatly appreciated.

The number of stocks in the autumn was 1369; 1029 in bar-frames, and 340 in skeps and boxes. Seven exhibitions have been held during the year. 1. In connexion with the Gloucestershire Agricultural Society's Show, held in Pittville Gardens, Cheltenham, July 26th, 27th, and 28th, 1887. This, our annual show, was one of the largest and best attended, and in every way the most successful ever held in the county, upwards of three quarters of a ton of honey being staged, and nearly half a ton finding ready purchasers; thus assisting the members to find a market for their honey. There were sixty-eight entries, twenty-three being free to cottager members. The Committee's thanks are due to J. M. Hooker, Esq., for acting so ably as judge, in many cases the entries being numerous and the competition keen; the Committee thank, too, J. Hutchinson, Esq., for his kindness in so hospitably entertaining Mr. Hooker. The second exhibition was held at Yate, in our Bristol district. We desire to note his generosity in returning the prizes obtained; 3rd, Down Hatherley, August 18th; 4th, Tuffleigh Flower Show, July 21st; 5th, Stonehouse Flower Show, August 4th; 6th, Winchcomb, August 17th; 7th, Minchinhampton, August 11th.

The Committee would press on the members the desirability of qualifying themselves to obtain experts' certificates, and hope that this year there will be one at least in each district, and congratulate the following, who have been successful:—A. J. Brown, Bradley, Wotton-under-Edge; J. White, Toddington, Winchcomb; R. Woodward, Charlton Kings, which with E. J. Burtt, and Hon. Secretary, each holds 2nd and 3rd class certificate; P. Newman, Gloucester, 3rd class. J. M. Hooker, Esq., and Dr. Bartrum were the examiners. The Committee look forward with confidence for the new year, and ask that each member will use his and her utmost endeavours to gain the support of their friends and neighbours and make the advancement of this Association known and appreciated.

After the report had been received, the officers for the ensuing year were elected, and the division of the county into districts with their advisers was arranged.

LEICESTERSHIRE BEE-KEEPERS' ASSOCIATION.

A General Meeting and Conversazione was held in the Mayor's Parlour, Old Town Hall, Leicester, at 2.30 p.m., on Saturday, 17th inst. The Mayor of Leicester had kindly undertaken the office of President, but was unfortunately by unforeseen circumstances detained in London. Another of the Vice-Presidents of the Association therefore took the chair, and under the presidency of K. B. De-la-Bere, Esq., of Burbage Hall, the meeting proved a great success. The attendance, taking into consideration the vile state of the weather, was good, and larger than an ordinary general meeting. Prior to the General Meeting, a Committee Meeting was held, at which the prize schedule for the annual show was drawn up, and other routine business transacted. During the course of the afternoon, Mr. J. H. Howard, of Holme, Peterborough, and Mr. W. P. Meadows, of Syston, held forth eloquently on storifying, queen-rearing, wax, honey, and other kindred subjects. A lively discussion sprang up now and then, and a very pleasant afternoon was spent by all present. Votes of thanks were recorded for Messrs. Howard, Meadows, and the chairman, and the proceedings terminated.

Mr. J. H. Howard was engaged to lecture on the 16th at Sheepshed, and on the 17th at Market Harborough. Reports not yet forthcoming.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

GLASGOW INTERNATIONAL EXHIBITION.

[1539.] The final allocation of space has taken place in connexion with this Exhibition, and we have only succeeded in obtaining twenty-five square feet. This of itself might have been a trivial matter had other exhibitors come forward, but the space is small indeed in comparison to the vastness of the industry we are trying to do justice to, and in accord with the apiarian talent which exists in this country. A very large number of American visitors are sure to be here, and I am fully convinced that our leading bee-keepers have on the present occasion lost a splendid opportunity of showing the advancement they have made in recent times.

Since the appearance of my first article on this subject in the *Journal*, I have had a great deal of correspondence from all parts of the country, offering honey of every description; but from these foregoing remarks it will be seen that only a very small space is at our disposal. Our samples to be varied must be small, and we hope to show some of the uses to which pure honey is now applied. The case we are getting fitted up will have six feet frontage, by three feet high, and four feet in depth—a total height from ground of about eight feet, and will be situated in Court 21.

In order to carry out the desire of some of those who have forwarded samples of honey, &c., we purpose acting as agents, and will issue a small catalogue of the different exhibits; and we are hopeful that this, in the hands of a regular attendant, will prove of mutual advantage.

We have thought of circulating pamphlets on the value of honey, &c., of exhibiting wax, and some of its useful purposes; indeed, the field is such a large one that perhaps in our anxiety too much may be attempted. At the same time, it is my brother's desire and my own to make our exhibit as interesting as possible, and we will be highly pleased to receive any further suggestions from bee-keeping friends, and any samples which may be forwarded.

As goods must all be inside the exhibition by April 15th, we hope all who have any desire to assist in adding to the interest of the exhibit will communicate with me at the earliest opportunity.—EBENEZER MCNALLY, *Main Street, Rutherglen.*

SHOWS AND RULES.

[1540.] I am quite aware of the trouble and thought the various Associations have taken in framing the rules applicable to shows and exhibitions, but occasions arise from time to time when slight modifications should be made as to carrying them out strictly to the *letter*. Rules are binding, otherwise it might be argued, what is the use of them if they are to be enforced in one case and overlooked in another. In the latter we certainly have a very strong precedent in a notable South Kensington Exhibition, where particular rules were most rigidly observed in some classes, and certainly ignored in others. My remarks in this letter are chiefly to point out certain errors which must creep up from the enforcing in all cases the following:—'*No cards other than those provided by the Secretary, label, trade-mark, or name of the exhibitor, can be placed on any part of an exhibit*,'—a splendid rule under most circumstances, but very hard in others. When this rule was framed it was to do away with a great evil, names, or any mark of ownership, being a great bother to judges in the classes for hives, sections, feeders, extractors; also honey, extracted or comb, &c., &c., as all these come into competition with similar exhibits of their kind, and are judged not only on their merits, but in comparison with others of their sort. Here the rule is of the greatest service. But, now, in classes for new inventions, since the rule was drawn up, articles of all kinds in which the products of the apiary form a prominent part of their manufacture, are admitted in these classes, and it is here that modifications should be made, and all must see at a glance that it would not only be an assistance to the judges in arriving at their decision, but it would also be disposing of an injustice to exhibitors. My twofold reasons are these: First, such exhibits are judged exclusively on their own merits, regardless of other exhibits in the class, and it is certainly wise that here judges should know something about what they have before them. I could bring forward a long list, but two well-known articles will suffice for explaination—'Mella' and 'Apifuge.' Fancy a bottle of the former shown without a label; the judges might imagine it was a new wash for the face, or an antidote against stings, &c., and would not venture to taste it. Then the latter might be thought a cure for foul brood, or a solution for other purposes. Here, for want of a label bearing description, &c. (*a name is a trade-mark*) exhibits would be passed over. Then, as to the hardship on exhibitors in this branch, not allowing description cards, &c., to appear during the show. Persons are placed at a great expense in exhibiting. Their things help to make up the show, and further illustrate to the public the great value of honey in applied forms. If the rule is enforced, exhibitors are prevented from making their inventions known, and the various exhibits to the mind of the public appear like a meaningless collection of bottles, tins, jars, &c. Anybody can see that a hive is a hive without a label, but a bottle of 'Mella' without a label might be anything.

The remedy is very simple, and is, I believe, practised by some societies. That exception is made to the rule when the exhibitor previously to the show explains to the Committee that his exhibit is of such a nature that it cannot be exhibited without the regular label and a descriptive card. Or, on the prize schedule a note might be inserted that the rule will not be strictly enforced in a certain class or classes. By the first of these suggestions the Committee could have the descriptive card submitted for their approval, and prevent the show being converted into a bill-posting station. But I am firmly of the opinion that if something is not done at once to avert this, many valuable exhibits will not appear, proving an injury to our shows and the industry at large.—EXHIBITOR.

GRANULATED HONEY: WILL BEES LIVE ON IT?

[1541.] In the spring of 1883, Mr. Garratt, Secretary Kent B.A., paid a visit to my apiary. In going over the stocks he pointed out to me that I had over-fed. I removed the combs, four in number; as they contained sealed sugar, syrup, and honey, they were not extracted from, but kept in a dry place till autumn, by which time they were complete solid blocks of granulated store; my stock, likewise, being well found I had no need of them. At length I decided to get some condemned bees

and put on them, which I did, adding one empty comb. There can be no doubt as to the honey being granulated, as the fact was proved when I cut winter passages, which I did before putting the bees on them. I fed them with 3 lbs. sugar syrup, slowly, until the queen commenced to lay, after which they were packed up well and never touched till Good Friday, 1884. When they were opened they were equal to any stock in the apiary. An artificial swarm from them gave 40 lbs. in Stewarton supers: about 15 lbs. granulated store, *i.e.*, honey and syrup, and the 3 lbs. liquid syrup carried them through.—PLATELAYER, *Ruckinge, Ashford.*

GRANULATED HONEY.

[1542.] A reader of your *Journal* was last week inquiring if granulated honey was good for bees. I have not had more than eight years' experience, therefore my opinion must be taken for what it is worth. I have found bees do very well on granulated honey, but not in cold weather. In April, when the weather is warm, I have known them do well on it; but they carry a great deal of water into their hives while consuming it.—CHARLES EYLES, *Box, Wilts.*

IS GRANULATED HONEY GOOD AS FOOD FOR BEES?

[1543.] Your correspondent 'Inquirer' (1522), in *Journal* of the 8th inst., appears somewhat perplexed, and speaks of the rather confounding opinions given in previous *Journals* as to the good or evil which might result from feeding bees with honey that has become candied or granulated in the comb or otherwise. Presuming 'Inquirer' to be, like myself, an amateur, though I might hope a less aged one, anxious of learning as much as possible, and desirous of avoiding any mishaps, I am not much surprised at his putting his question, which, as I read it, simply means, which of the doctors' advice is best to follow?

It just occurs to me 'Inquirer's' question would have been a very suitable one for your 'Selected Queries,' when possibly we might have had the benefit of reading the able views of our specialists. I observe, however, in your editorial note to 'Inquirer' you solicit the views of your readers upon the question, which is certainly an important one, so that I hope to have the pleasure of seeing a good response in next issue.

On glancing over what has been written, I am inclined to think the very decided opinion expressed by our valued friend, 'Useful Hints,' opens up a broad question, not only of the natural food supply for bees, but also the internal working of the hive, whereby none other but liquid honey shall be available to the bees, which means all honey left in the hive at the close of the season must be so preserved as to keep it from becoming granulated. Now I judge that most bee-keepers follow the good and oft-repeated advice you give, and leave abundant supply of natural store when packing down at the close of the season; but then if any portion of such store should become granulated, and is to be condemned as unsuitable food for the bees, the question arises what is the best and most simple course to adopt. In most cases when I have found stocks dead with store in hive, the store has been of that hard sealed nature so often found in old combs, and which at a low temperature bees are unable to remove. Here is a point too often overlooked when packing down for winter, and it would be well not to gauge supply by store thus sealed, all such sealed store should, in my opinion, be uncapped at the close of the season when the bees could remove it and reseal it so as to make it convertible.

In venturing to advance my own opinion as to granulated honey being suitable food for bees I may say that I have long followed the practice of using any candied honey I may have had for the purpose of feeding (first uncapping it) and without ever having noticed anything which led me to conclude that such food was injurious, therefore I do not consider there is the least to be feared from bees feeding on honey that has become candied in the comb in the hive, nor of feeding bees with honey which has become granulated in the comb that has been removed from the hive at the close of the harvest, provided such combs have been kept dry; nor is there any risk of injurious results from feeding bees with extracted honey that has become candid, most will admit that sound liquid honey is the *best food;* doubtless there is some danger in feeding with extracted honey that has long remained liquid, as such is so often topped with partially fermented honey. *Caution* in this case must be the watchword.—R. H. GODFREY, *March* 12.

GRANULATED HONEY AS FOOD FOR BEES.

[1544.] In compliance with the request of the Editor of 'Useful Hints,' I wish to say that he is quite right in what he states regarding those 'cold slabs of granulated honey' being unsuitable food for bees, but it is not through granulation so much as through fermentation having set in and partly changed what before was excellent food into the poisonous substances alcohol and carbonic acid. I do not think any of us would find our health improved if we found our wine and beer changed into vinegar and were compelled to sup it. However, bees can put up with a good deal, and if the weather be sufficiently warm to enable them to get water to dissolve the hard granules, they will not perish for want of food with plenty of these 'cold slabs of granulated honey' in their hives; in cold weather they will starve on it.

'When honey is extracted and granulates'—may I suggest that the word 'solidifies' be used instead of 'granulates,' when honey assumes the 'set' condition?—F. BOYES, *Beverley, March 12th.*

'BEE-KEEPERS' ADVISER.'—DISPOSING OF HONEY.—DIPLOMAS.

[1545.] Allow me to congratulate you on your 'new departure'—the *B. B. K. Adviser*—a copy of which reached me a few days ago. It should prove most serviceable to the class for which it is especially intended.

I have been intending to write to you on many points for the last six months, but have let the opportunity slip, and now it is needless to refer to subjects which have been fully discussed in your columns. Some time ago there were several letters complaining of the difficulty of disposing of honey, and generally of making sufficient profit from bees to pay for labour expended. To judge from my own case, I should advise beginners never to despair. For a long time I could not obtain a really satisfactory result, and fancied that your own exhibits and those from Scotland (I am speaking of twelve or thirteen years ago) were due to better pasturage for bees, &c., and, in fact, everything but *my* want of skill. Time went on, and I began to know my subject better, and then my honey 'tale' began to improve; and it may interest a correspondent of yours, who has been lately writing from a south country town, that in a neighbouring county to his, in the first year that I was really successful, I made more than 24*l.* from eight hives. Of course it will be said that at that time the price of honey was much higher than it is now: this is true, but, on the other hand, bee-keeping is a hobby of mine, and therefore the sale of honey, though a satisfaction, is not of vital importance to me. I have never had any trouble in disposing of honey (my experience is almost entirely with sections), and this I attribute to being very careful to

clean up sections nicely, to taking off the honey just at the right time, and to other things which experience shows conduce to a section being considered quite '*first-rate*.' A second-rate section will never repay the producer. All this leads me to think that bee-keepers should not despair, though they fail at first.

Certainly, now-a-days, it seems that a person thinks himself a bee-master as soon as he gets a hive with bees and has obtained a few hints from experts, advisers, or bee-books, which were wanting twenty years ago; but knowledge of this sort must be supplemented by practical experience before an apiary can be expected to pay its own way.

An allusion, some time ago, by one of your leading contributors to honorary diplomas from the B. B. K. Association reminds me of a conversation I had once at a county show. I was watching an examination for third-class certificates, and was making some remarks to a bystander, when he posed me by asking if *I* had a certificate. I had to confess I was going to wait until one was given me, but my position as an 'authority' was at once gone. Honorary awards would, I think, raise the value of certificates in the eyes of the world; though I know it would be difficult to make fit selections, and it should be done very carefully.

One of Messrs. Abbott's new sections has been submitted to me. Though the improvement is *seemingly* slight, the section is essentially different from any I have seen, and I think it is as perfect as any *one*-piece section is likely to be.—EAST GRINSTEAD."

PAINTING INSIDE OF HIVES.

[1546.] I have painted inside of my hives for years and never experienced the slightest difficulty arising therefrom. One of mine was rather damp in January, I simply slipped a couple of thin stones (that being first thing to hand) between hive and floor-board, lifting it about one-eighth of an inch. I take it a hive is as likely to get damp unpainted as painted, the only difference being, in unpainted the moisture sinks into the wood, in painted runs down to floor-board, which, if raised soon dries. After using an unpainted hive a few years, how dark the wood gets and how difficult to thoroughly clean. Painted hives wash easily, and can have another coat of paint, which makes them as good as new. That is the opinion of a—NORTH DEVON RUSTIC.

PAINTING THE INSIDE OF HIVES.

[1547.] The description given by Mr. Adcock (pp. 143, 144) of his hives satisfies me that the internal wet from which his bees suffer and die is not caused by the inside having been painted. My bees have got on very well for eleven years, and so Mr. W. Carr writes have his for thirty-five years, in hives the insides of which are well painted. But Mr. Adcock makes a hive with the floor-board constructed as a veritable swimming-bath, which is certain in winter to get filled with a depth of three-quarters of an inch of water. No wonder his bees get drowned. I should as soon think of arranging a watertight floor for my fowl-house in which if six inches of water chanced to get it could not escape. If it is absolutely necessary in order to feed up condemned bees to have such an extraordinary feeder, the big float should have been left on when the feeding was over, and the poor bees could have had a chance with it as a lifeboat.

Mr. Cheshire says: 'The floor-board should gradually slope towards the "mouth,"' a principle on which I have always acted in making and arranging all my hives. Then the damp that condenses on the side walls at once runs off, and escapes by the flight-hole, where on such days as yesterday (March 16th) the remains of it were to be seen in the form of an icicle at either corner of the alighting-board, just as Mr. Carr described his, whilst all within was snug and dry. As I mentioned in my letter on this subject in the *B.B.J.* for last year, bees varnish the insides of straw skeps, and render them impervious from the inside to damp, and I have examined a skep occupied by a strong colony during such a black frost as we are now experiencing, and the sides had a thin coating of ice where the moisture had condensed. The moment a change of temperature came this would dissolve, and instantly find egress at the flight-hole.

If Mr. Adcock will refer to Mr. Cheshire's work on Bee-keeping, which I quote from as being the latest and most complete work on the subject, he will find that two to four inches is much too narrow a flight-hole, especially when there is no possibility of the slightest upward ventilation in winter. I always afford mine the full width of nine inches by a quarter of an inch all the winter. At p. 530 of Vol. II., Mr. Cheshire writes:—'Bees stifled by contracted hive-mouths, and the careful closing of all apertures above, are in the condition of coke in an Arnott stove with the draught-hole closed. The process of heat-production cannot go on, and the bees, stupefied by carbonic acid, possibly drop from their cluster to die.' This, I believe, explains the lamentable mortality among Mr. Adcock's bees.

After reading what has been written on the subject, and comparing it with the results of my own experience, my advice to bee-keepers, in order to secure dry and sweet insides to their hives in winter, is:—1. Have your floor-boards gradually sloping towards the flight-hole; 2. Paint well the insides of your hives; 3. Give a flight-hole in winter of nine inches long by a quarter of an inch high.—H. W. LETT, M.A., *Aghaderg Glebe, Loughbrickland, Co. Down.*

HORNETS AND WAX-MOTH IN PALESTINE.

[1548.] All southern lands abound with hornets (*Vespa crabro*), especially such places as afford good nourishment. They thrive well in Palestine, living on carcasses and on fruit. Hornets live in communities like the bees. In spring the queen, the only surviving individual, comes forth from her winter quarters—in the stem of a tree, old house, &c.—and takes possession of either an old nest, or starts building a new one, in walls, fissures of rocks, or in the ground, which she digs herself by carrying out small stones and clods; she has to do all the work till the first young ones are out. Having prepared a fit place, she builds her first comb horizontally, the lower part only having cells; she lays as many eggs as she can easily care for, and flies out to carry home food for her brood. The first workers appear in June; as soon as they appear, the mother remains at home, having no more work left but that of laying eggs. As the workers increase, fresh combs are built one below the other, attached to the top comb by a stout central column and by a lesser side column. All is built of mud and some woody fibres; some combs are as big as fifteen inches in diameter, and five or six combs are often found in one nest. Sometimes in August they have grown to be very dangerous to the bees, and will destroy apiaries wherever they get a chance to enter the hives. In September they lay drone eggs in the same cells in which the workers were hatched. New combs for queen-rearing are now built; the cells are a deal larger, and very often these combs are superior in number to the worker-combs. In November all workers are gone; the drones too, having fecundated the queens for the following spring, disappear. This is a good time to destroy numbers of queens at a time. We destroy every hornets' nest we can get hold of by putting fire to the entrance; and if in the ground, open the nest by degrees to get out every one of them. Naturally enough this is done by night, as it would be impossible to attempt disturbing such a nest in the day-time, as the hornets which are out would attack you, and their long sting penetrates even through

the clothes. The badgers, too, help us by invariably digging up such nests as are accessible to them; they open the hives, too—it is the brood they are so fond of. Happily the hornets do not develop equally strong in every place, nor in every season. In 1885 and 1886 the Plain of Sharon was full of their nests; in 1884 and 1887 the mountains of Judea (around Bethlehem), whither we take our hives for the thyme-blossom in July, were full with them. Some parts near Jerusalem are quite rid of them: it is there we resorted with our apiaries. Mr. F. Benton and myself killed numbers of hornets daily at Beyrouth (Syria) in 1882. The method we them employed was by taking a board fit to handle and striking them as soon as they attempted to take the bees gathering at the entrance. Last spring we killed innumerable numbers of hornet-queens, still the development was very strong.

In 1886—a very favourable year for hornets here in Jaffa—I put down in my diary—'Hornets killed: Sept. 30th, 2582; Oct. 1st, 608; 2nd, 903; 4th, 104; 5th, 2604; 6th, 2637; 7th, 3352: total of seven days, 12,790.' Does not your correspondent (page 93) say:—'In a whole year nearly 400 hornets were killed round the hives?' Hardly worth the trouble to talk about hornets! I did not note the hornets killed either before or after these seven days marked, but during two long months have I been troubled with them sufficiently, and have taken to every possible remedy: firstly, by killing them by thousands almost daily; secondly, by the 'Palestine dodge of smoke' (a very good one, too); thirdly, by closing the entrance of hives—the bees themselves had no objection to being shut up from morning to just before sunset, when I used to give them a chance of having a flight; and fourthly, by putting hives with combs and honey (no bees) open to attract hornets; by this method I sulphured on one occasion over 500 hornets that had gone in to get the honey, repeating the same again and again the same day. Another good method to observe is to kill every hornet flying about from March to June—they are the queens; are much bigger than the workers, are very easily recognised, especially later on when some workers begin to fly. By striking a queen dead at that time a whole nest is broken up. After that time they no more appear till November. A few hornets killed here and there almost make no difference to bee-keepers, as I can well assert, for, after having killed 12,790 hornets in seven days, besides having killed just as many, or nearly so, weekly during five or six consecutive weeks, I hardly noted the difference. I suppose Malta is very much in the same conditions for bee-keeping as Palestine, as we read of orange, karob, and thyme blossoms, also the way the natives keep their bees. We have single-walled hives, one inch lumber, ventilating holes, two on each side of the hive, which are made especially for the moving to and from the mountains in June and November. We depend on orange-blossom in April, cactus in May, thyme in July, the karob is too scarce to afford any crop. Our hives are unprotected from the sun, and though the thermometer goes as far as 95° Fahrenheit in the shade, we never knew any full-built and heavy combs to drop from the heat; fixing the comb-foundation with fat or waste-wax, to keep as long as the bees have not fixed it, has no effect whatever on the built-out comb later on, as it is fastened enough by a strong colony of bees. The bees now begin building foundation combs, which we fix in the nailed frames. We have about fifteen thousand frames in use, they are made of Swedish pine-wood and never warp; they will hold as long as the comb is well preserved from the wax-moth, a very serious enemy, which has to be combated by putting in air-tight hives or boxes all surplus combs, and sulphuring them once a-week at least during the first month, and once a fortnight in the following two months, then once a-month till the beginning of January; they are, then, almost safe, still occasionally looking for them. The wax-moth will eat up and utterly destroy any number of combs not sufficiently separated, *i.e.*, hang them two inches apart from centre to centre, and light a piece of sulphur, put in some old plate and hang or put it in a free space inside the store-hive or box, shutting it tightly to have the combs well impregnated with sulphur. Water is absolutely necessary (for bees) to be provided for in such places as where fountains or pools are absent; a few hives are easily supplied with water, and bees find their way to get water, any hour, in an inhabited place.

We now freely give stimulative food to prepare for the orange crop, which is coming on very soon, in fact, too soon to have the colonies sufficiently strong to get surplus by letting them develop naturally.

We are five brothers, and own 680 bar-frame hives all in one place; we move all on camel-back, each camel taking eight hives.—PH. J. BAHLENSPERGER, *Jaffa, 7th March*, 1888.

CONSANGUINITY. (1520.)—VIRGIN QUEENS.

[1549.] If 'A Cottage Amateur' has never tried keeping a frame of eggs away from a stock in a July temperature, a 'Platelayer' has, with the result that the eggs hatched, at least most of them, into dwarfs, cripples, stingless, wingless insects. Of course the experiment with me was accidental, and I am not likely to repeat it.—PLATELAYER, *Ruckinge, Ashford*.

EGGS BY POST.—CONSANGUINITY.

[1550.] In my letter (1520) occurs the following passage:—'"A Cottage Amateur" has never tried keeping a frame of eggs away from a stock for forty-eight hours, even in a July temperature, or he would know that it would be equivalent to keeping a hen off her eggs for forty-eight hours, and then expect them to hatch.' These observations we made upon the strength of two circumstances that came under my notice during the last season, and were as follows: Upon removing some frames containing brood and eggs from two hives, at different times, one was in each case inadvertently allowed to remain behind the dummy-board until the following day; having replaced them in the hive, I found that the fertility of the eggs was destroyed, they failed to hatch. I think that such a position during July or August would be found warmer and of a more equable temperature than that which would be experienced in sending them by post where, perhaps, the mail-bags may be placed in a direct draught from under the doors of a train, perhaps travelling at the rate of forty or fifty miles an hour, which would materially reduce the temperature; or being carried in early morning a few miles on the back of some rural postman; or, perchance, lying for hours in a cold post-office. Of course it is quite possible to send eggs if they are, by artificial or other means, kept warm during transit. When reading Mr. Edey's letter upon the above subject, I fully understood him to mean sending frames of eggs together with adhering bees, and which I now believe he means.

During the coming season, if any bee-keeper will remove a frame of eggs from a hive and allow them to remain exposed to the variation of temperature which must be experienced even in July for forty-eight hours, he may safely depend upon their failing to hatch.

If our friend, Mr. Boyes, will inquire, he will find that Mr. Bate's, and, in fact, all pedigree herds, were not *produced* by in-and-in breeding. Consanguinity is resorted to by pedigree stock-breeders—which I have before pointed out—not to *produce* a variety, but to perpetuate certain features in a herd at the very frequent expense of stamina. He will also find that all herds are recruited from time to time by the introduction of fresh blood of the same variety from other herds, in order to prevent the ill effects of in-and-in breeding. I have advocated a

cross to improve our bees, not to go 'jog-trot' on the same lines as of old. If we can improve our stock—and we most certainly can—why not do it?

Mr. Woodley's advice, in the first part of his letter (1534), to all, to write what they have a knowledge of, is truly rich, when in the last paragraph he writes the absurdity of a crab-apple producing a 'pippin' by grafting. Allow me to inform him that it is the scion that produces the 'pippin,' and this scion has been produced by cross-fertilisation before it was grafted to the crab stock, the crab stock would only produce a crab if allowed to produce anything. Grafting is a means of perpetuating a variety already *produced* that it may be of greater utility to the owner.—W. B. Webster.

JOTTINGS BY WOODLEIGH.

[1551.] I think my letter (No. 1534, par. 6) will answer Mr. 'Useful Hints' in his paragraph 'Olla-podrida,' where he animadverts to my previous letters on consanguinity, he will see that I do not advocate in-and-in breeding. The object of my writing was to allay any fears that the theories of Mr. Webster may have raised in the minds of some bee-keepers, and to prove that his opinions in the declining prosperity of the two cases cited by him must proceed from some other cause than in-and-in breeding. Mr. 'U. H.' has kindly given an extract from a letter in Vol. V., p. 11, *B.B.J.*, by 'A Renfrewshire Bee-keeper.' Evidently our Scotch friend was not conversant with methods adopted to keep his stock pure, or he would not have had to bewail only one instance of pure impregnation during many years, and which he imputes to chance by having an unfertilised queen at the head of one of his colonies. How different from the results obtained by a great master in the bee world, the great Dr. Dzierzon, who exhibited the *finest* amongst many *fine specimens* of queens at the Congress of Austro-German bee-keepers that year, 1883, (*vide* Vol. X., p. 271, *B.B.J.*) and asserted by Dr. Dzierzon to be a *direct* descendant of the first Ligurian stock brought into northern *Europe* thirty years before. Here is an instance of one of the first masters in bee-culture in Europe keeping his race of bees pure.

As an instance of how easily bee-keepers are alarmed by recognised teachers, take the case of 'Inquirer' (1522). Here we have a bee-keeper with a stock of natural food on hand, probably crystallised sections, and afraid to give it to his bees because Mr. 'U. H.' says it would be injurious, yet a fortnight later our Editor says it is not injurious to bees, *i.e.*, granulated honey. No wonder a new hand was in a quandary over the matter, but if he thinks my advice worth following, I say give the granulated honey to your bees. If in sections place two together with glass on the outsides, secured as in glazing your sections for market, place over the feed-holes of your hives, then wrap up in some soft, warm material; and if your colony is strong they will soon clear out the honey, leaving you the combs beautifully clean, and ready for refilling in June. I myself have been feeding as above with sections that were solid by crystallisation, and have not seen the slightest sign of dysentery, and my bees have utilised every scrap of honey in the sections.

It is only a reasonable deduction that if bees can reduce hard cakes of crystallised sugar that they will be able to liquefy crystallised honey; and if honey so soon granulated, that is gathered from the seed-farms of Cambridgeshire, the bees in that locality must live on hard slabs of crystallised honey the year through.

I trust bee-keepers will take the hint of Mr. Griffin (1524) *re* the *Railway Rates* for honey. It will be by concerted action in the matter that we shall be able to make our influence felt, and with the many patrons of bee-keeping who figure in the various reports of the County Associations, we ought to have any amount of influence if the matter was brought before the different Railway Companies by some of our patrons and supporters.—Woodleigh.

FRESH BLOOD.—ITALIAN BEES.

[1552.] If 'Useful Hints' does not eventually turn all our bees into Italian hybrids it certainly will not be his fault, judging by the persistent manner in which he extols his favourite Ligurians in the *Journal* and denounces our native bees; indeed, he seems never more happy than when lauding the praises of the former and blackening (no pun, please) the latter.

Now, valuable as his instructions undoubtedly are on most other subjects, on this particular one it seems to me his enthusiasm gets the better of his judgment, and he allows his hobby to run completely away with him. Don't be alarmed, please, Mr. 'U. H.' I am not going to condemn your favourites, only to point out what to me seems like a little inconsistency in your last week's contribution on this subject, which is this, that you allow Mr. Webster to give two cases of supposed degeneracy through isolation and interbreeding without a word of comment; but no sooner does Mr. Woodley bring forth two other cases to show that no bad results had followed isolation and interbreeding, than you at once come down upon him 'like a barrow-load of bricks.' I always thought that 'what was sauce for the goose was sauce for the gander;' and there is no other reason for supposing it otherwise—except that the one case was favourable to your argument and the other was not.

What 'A Renfrewshire Bee-keeper' found out in regard to his Italians crossing with the surrounding native bees, and what you yourself advance on the same subject, is perfectly well known to be true, and to be in accordance with that general law which not only enjoins, but provides for, the crossing of both animals and plants, and to which I alluded on page 145 of last week's *Journal*; but it is not necessary that the cross should be of *foreign* blood, any more than that an Englishman should be compelled to go abroad for a wife to prevent consanguinity. All those bee-keepers have to do who keep our native bees, is to get some driven bees or queens from a distance (and I have gone and driven bees as far away as thirty miles on purpose to get a cross), and there will be no fear of too close interbreeding.

I have been most particular to make inquiries that no foreign bees were kept within ten miles of where I have got my cross. The very name of foreign bees is distasteful to me, because I cannot find out that the foreigners take any pains to cross their bees or in any way improve them, but concentrate all their energies on producing queens in large numbers so as to reap the rich harvest of English money which awaits them; not only so, but the disastrous results from foul brood, which followed the introduction of Italian bees into the apiaries of Mr. Woodbury and others, should make us pause before placing such a terrible curse amongst our bees.—F. Boxes, *Beverley, March 19th.*

Echoes from the Hives.

Vaison, Vaucluse, France, Mar. 10.—We have had a long and severe winter, but the last four days have been almost like summer, and my bees seem almost wild with joy! This afternoon I noticed pollen was brought in large quantities; the bees were so laden that they could scarcely crawl in through the surging mass of young bees at the entrance. I should say quite thirty bees came with pollen every minute. Our hills are covered with box-trees, or, rather, shrubs, which are just coming into bloom; and a little later on there will be hundreds of peach, apricot, cherry, plum-trees, &c., in blossom. We have also acacias and lime-trees, and wild thyme

abounds everywhere, as well as wild mint and sage. Near our house there are several fields of sainfoin and lucerne. Do you think these ought to yield the best honey? What I had last year was most fragrant, and had a delicious flavour; colour, pale amber. I am a novice, and having no one here to help me, bee-keeping being in its infancy (brimstone is the fashion), I have to learn by reading and practising to the best of my ability (a poor best at present). I much enjoy reading the *B. B. Journal*, especially those passages relating to the early experiences of bee-keepers. I have only one stock at present. It was a first swarm last May; consequently, the queen is in her third year. As I cannot replace her, I shall have to make an artificial swarm, and let the bees raise a new queen in one hive, but I am puzzled how to manage about the other, if I have to destroy the old queen. I have not been able to see her majesty yet. Yesterday I tried my very best, but the combs were so covered with bees I failed to discover her. One frame was so heavy I had to rest it on the edge of the hive, and while reaching for a knife which had fallen beside me, the frame slipped from my gloved fingers, and down went frame, brood, honey, and bees! I never looked, but fled to the house before the infuriated bees had time to recover from their surprise. Shortly afterwards I was thankful to see they did not seem much the worse for the shock they had sustained. I have bar-frame hives (Abbott's); in time I hope to have some like Mr. Cowan's, as illustrated and described in his book. All the hives here consist of four planks nailed together, which form a box about ten or eleven inches square and five feet high; two cross sticks are placed in the middle. The bees are not fed, but are suffocated when the honey is taken. All our neighbours laugh at me, and evidently think I am a harmless lunatic, but I do not intend giving up such a delightful pursuit, especially after having been stung so many times. This place is twenty-seven kilomètres from Orange. It is very hot in summer, and very cold in winter; we have so much north wind, which, I suppose, is very bad for bees.—Blanche G.

[*Artificial Swarming and Raising New Queen in Old Stock.*—First divide your stock, ascertain which portion has the old queen, taking care the swarm has two frames of sealed brood almost ready to hatch, and one frame of *eggs*, which can easily be obtained in one of the frames with foundation, about twenty-four hours after it has been inserted in the old hive. Wait until the new queen has commenced laying in the new hive, say, thirty days, then destroy the old queen, removing all frames with larvæ to the new swarm, but leaving eggs in the old one; they will then raise a new queen under the best conditions. In both cases, insert a frame of brood, not sealed, into the hive where the young queen is about to hatch out. This should be done about two days before the queen appears, and at the same time destroy all queen-cells except one. You would be doing well to purchase a new queen for the swarm. *Honey Supply.*—We very much doubt if your prospects of obtaining good-flavoured honey could be much better than they are. We should be pleased at any time to receive notes from you on any local system of bee-keeping, and also to assist you in any way. We regret your accident, and hope the bees did not lose their queen.—Ed.]

Tinahely, March 13th.—Herewith find postal order as my subscription to your *Cottage Bee-keeper*. It is quite a boon to the agricultural community, and will (in Mr. Cowan's hands) 'be up to the times.' Our Poor Law Unions here are asking Government to give each of them 100*l.* annually as prizes for well-kept farms, best bulls, minor industries, such as fruit-raising, bee-keeping, and poultry-farming. I think your people ought ask a like grant, as well as a Minister of Agriculture like our Colonials. Bee-keeping is spreading well here, but our medical friends don't advocate well enough 'honey as food.'—J. Traynor.

Alton, Hants, March 15th.—To-day the weather is warm. The bees seem very strong and very numerous. They are working on the crocuses. The weather has been very serious for bees this winter. Being so warm in January some of them started brood-raising. I find one of my stocks, a very weak one which started brood-raising, the whole lot are dead. It was a weak lot last season, the queen being lost or killed; they raised a new queen in place of the lost one, so I had been watching this stock to see its progress, when, to my dismay, I found the whole lot dead, with plenty of food.—F. G. Ayling.

Goole, March 17th.—During the past week we have had a return of severe winter weather, snow and rain having fallen rather heavily, accompanied by keen frosts during the nights. It has been blowing a gale most of the week, from the north and north-east. We are wishing for a fine, warm day, to enable us to examine two hives that we have some doubts concerning the queens.—A. Woodhead.

Forfar, March 19th.—We have had a severe snow-storm here, which has put a stopper on everything. Crocuses would have been in full bloom by this time if the weather had kept as warm as it was before this came on. Bees *were* flying as it was, but I saw no signs of pollen being got. My bees were out yesterday too, and I had to shade the front of the hives with boards. I saw many of the bees lying dead on the snow, and many of them alighting on it. Food is getting scarce in many hives, and I have had to feed several of them some time ago with Saddler's candy, the first allowance of which was soon eaten up. I may mention that the whin (gorse or furze) has been in bloom here the whole winter. I found it in bloom at the seaside in November, and since that time here. Wishing you all success.—D. Kydd, M.D.

Streetsville, Canada, February 27th.—Our bees in this locality seem to be wintering pretty well up to date, but the trying time is to come yet, as bees that are in the hives now were hatched last July and August principally. There have been a few days this month that bees could fly in this part of Ontario.—W. Couse.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

M. D.—*Moving Bees.*—Move them back about three feet every evening of such days *only* that the bees have been on the wing. Set a piece of board to lean against the front of each hive so that the bees may mark their new surroundings. Had you moved them, say in November or December last, they could have been shifted to their new stands direct.

Inquirer.—*Salicylic Acid added to Bees' drinking water.*—It is highly improbable the bees would avail themselves of your kindness.

D. M.—1. *Disinfecting Suspected Combs.*—We should prefer the spraying as much as possible for the simplest plan, but, considering the present price of foundation, it is positively unwise to use any combs about which you have any suspicion. 2. *Wiring Frames.*—Certainly the bottom rail will bend if you put any strain on it by drawing the wire tight. We hardly understand how your wire slacks if you have your block the right thickness under the foundation. We also refer you to page 256 of *B. B. J.* for 1887.

KINGSTON.—*Phenol in Drinking Water.*—The bees will not take it while they can get pure water.

J. R.—1. *Granulated Sections.*—Cannot be restored to their original consistency. 2. *Storing Comb Honey.*—We presume you mean sections. They should be packed away from the light, and kept at an even temperature of about 65 to 70 degrees. See recent article by 'Amateur Expert' on this subject.

J. RODO.—*Management of a Bar-frame Hive.*—Hive a swarm on, say, five sheets of foundation. As soon as the outside ones are being drawn out, add a fresh frame with foundation in the centre of the brood-nest. Give full sheets of foundation unless you have a honey-flow at the time of hiving the swarm; if so, give ½-in. starters only, place queen-excluder on the frames, and a section rack with full sheets of foundation on top at once, cover up warm, and place on stand of parent stock. Watch that they do not run short of food if the honey-flow suddenly ceases. Seven frames of brood only will give the bees a better chance of storing a surplus than ten. Give the other three at the front with starters only; they will only build them then as they require them. We have found eggs laid within twenty-four hours of hiving a swarm, although the comb had to be entirely built by the bees without the aid of foundation. Unless you have exceptional advantages, you ought to get your sections finished and removed by the beginning of August. About six frames are sufficient for an ordinary stock to winter on. There should be about twenty to thirty pounds of either honey or syrup in these frames for winter store. We should advise you to study Cowan's *Guide*, also the back numbers of the *B.B.J.*, from which you will get much help. We will be pleased to help you at any time.

W. M. E. L.—*Will Strange Stock Fight?*—You need not fear to move your bees to the farm, neither need you fear they would kill any swarm you might buy. Bees are most peaceable folk. Ten shillings for a first swarm in May is very reasonable. Second swarms of course are not so valuable as first swarms, but local circumstances *must* determine local prices. No doubt if you take all swarms the farmer may have, you will find no difficulty in arranging the price.

T. N.—1. *Zinc over Feed-hole.*—Use tin by preference; you can easily punch some holes in it. 2. *Space below Frames.*—About half an inch is quite sufficient. 2. *Bees dead.*—Probably cold or starvation, but it is impossible to say for certain without either seeing the hive as you found it, or else having a detailed description of packing, relative position of dead bees, and their unconsumed stores, &c. 4. *Bees Killing one another.*—This looks like robbing. Try placing the hive mentioned in an entirely fresh position, and contract the entrance to about ½ in. for a week or two until they get stronger.

C. M. P.—The sample of sugar may do for the bees, but you will not find it so suitable as Porto Rico.

NATIONAL CO-OPERATIVE FLOWER SHOW.—By an oversight, amongst the prizes to be given was omitted Turner's Cottagers' Hive, value 10s., presented by Messrs. Turner & Son, Radcliffe-on-Trent.

Business Directory.

HIVES AND OTHER APPLIANCES.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
APPLETON, H. M., 256a Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BURTT, E. J., Stroud Road, Gloucester.
EDEY & SON, St. Neots.
HOWARD, J. H., Holme, Peterborough.
HUTCHINGS, A. F., St. Mary Cray, Kent.
MEADHAM, M., Huntington, Hereford.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.
WEBSTER, W. B., Binfield, Berks.
WOODLEY, A. D., 26 Donnington Road, Reading.
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Editorial, Notices, &c.

PRACTICAL WORK IN THE APIARY.

EXAMINATION OF HIVES.

The time has at length arrived when it is necessary to examine hives, so as to ascertain their exact condition. The weather hitherto has been so cold and changeable that wise bee-keepers have not disturbed their bees. Now, however, it is quite time to do so, that they may note the condition of their colonies, and be able to settle on the course to be pursued. Have everything that is likely to be wanted ready at hand, so as not to keep the hive open longer than is absolutely necessary. Although the sun may be shining on fine days, the warmth is deceptive; the air is chilly, and brood long exposed to its influence at this season is likely to suffer and become chilled.

Having everything ready, we remove the roof and quilts, or chaff-box, and subdue the bees either with smoke, or carbolic fumes, or carbolic-acid solution. If smoke be used, it can be administered by gently turning up the last quilt next to the tops of the frames, and by blowing in a few puffs at the ends of the frames. We prefer blowing in the smoke at the ends, because it will travel right along the passages between each of the combs, and will reach every part of the hive much sooner than if it strikes the face of the comb at the side of the hive. Put down the quilt and allow the bees a few seconds to gorge themselves with sweets. Then turn over one side of the quilt, exposing one or two frames, and give the bees another puff or two of smoke before proceeding to examine them. We have also used successfully the carbolic sheet recommended by the Rev. G. Raynor instead of smoke, and bee-keepers will find its application very easy. The solution is prepared in the following manner:—

Calvert's No. 5 carbolic acid	1½ ounces.
Glycerine	1½ „
Warm water	1 quart.

The acid and glycerine should be well mixed before adding the water, and the bottle must be well shaken before using the solution. Bee-keepers should keep this solution always in stock, as it is useful not only for manipulations but also in cases of robbing. A piece of calico, or cheese-cloth, can be soaked in it, and after wringing it is ready for use. Before opening a hive moisten a goose-quill with the solution and pass it over the alighting-board and around within the entrance. Then gently raise the quilt on one side of the hive and pass the feather moistened with the solution over the frames as far as the centre of the hive. Lay the quilt down gently, and do the other side in the same way. Then take off the quilt and lay the carbolic sheet over the frames. The carbolic sheet can also be applied without the use of the feather, by rapidly stripping off the quilt and laying the sheet in its place before the bees have time to recover from their surprise. Afterwards turn up the sheet and push the division-board on one side, so as to give plenty of room for the removal of the first frame. Take hold of the frame by the projecting ends, and carefully lift it out of the hive without crushing a bee. Then raise it to the level of your face and examine it. If the bee-keeper wishes to find the queen he must look very carefully for her, as at this season queens are very likely to escape notice, being much more active than they are later in the season. Both sides of the comb should be examined as rapidly as possible, and with a little practice dexterity will be acquired, and the bee-keeper will be able to turn his frames with the greatest ease if he carefully follow our instructions.

Having the frame on a level with your face, lower the right hand and raise the left until the top-bar of the frame stands perpendicular. In this position the same face of the comb will still be towards you, with the bottom-bar of the frame towards your left. Now give the frame a half-turn round towards the right. This will bring the other side of the comb to the front with the bottom-bar turned towards your right-hand side. Lower the left hand, which is at the top, and raise the right so as to bring the top-bar to a horizontal position. Now you have the top-bar at the bottom, the bottom-bar at the top, and the comb in the same place as it was hanging in your hands when first taken out of the hive. In this way the comb is reversed, and you are enabled to examine the other side. To bring it back to its original position, reverse the operation, always taking care to keep the comb perpendicular. This method of procedure applies specially to combs built in frames that are not wired, as of course combs that have been secured in wired frames are not liable to give way like ordinary combs. If an ordinary comb is only fixed to the top-bar and part of the way down the side-bars, as is generally the case, when this is turned up, unless kept in a perpendicular position, it is liable from its weight to break from its attachments, and fall out of the frame. After the first comb is examined, put it gently into the hive

and place it slowly into the rabbets so as to allow any bees upon feeling the slightest pressure a chance of getting out of the way. This frame is placed at the proper distance from the division-board, and the next can be taken out and examined in the same way. Examine the combs from outside to the centre, then cover them over and commence operations from the opposite side.

When all the combs have been inspected, remove those that are found to be superfluous, allowing the bees only as many as they can comfortably cover. Brood will be found in all strong hives. We examined some hives about a week ago, and found five frames of brood in one and six frames in another hive, there being enough bees to cover eight and nine frames respectively. These bees had been put into winter quarters in September, and not touched since. The centre combs had brood to within a couple of inches of the end bars, and there was a good deal already hatching out, and a great many young bees in the hive. Such hives are in good condition and do not require much attention, except a little stimulative feeding to keep them going. When all the frames have been replaced, push up the division-boards, put on the quilts and cover up comfortably. Go over all the hives in the same way, noting the quantity of brood, the number of frames in each; and if the queen has not been seen make a note of this also, so as to be reminded to look for her at a future examination.

Bees require now to be kept warm more than at any other time because the nights are very cold, therefore leave no more combs than they can cover. Be sure that the bees do not run short of food, or have too much, otherwise the queen will not find room to lay her eggs, and the development of the colony will be retarded.

The first examination should be done on a fine day; and if the bees are inclined to rob, late in the afternoon. Do not leave the hive open long, but keep it covered with the carbolic sheet, which will generally keep robbers at a respectful distance. Clean hives and floor-boards may be given to any colonies requiring them, although we prefer to defer this operation until warmer weather sets in, as it takes much longer to accomplish than a preliminary examination such as we have described.

PRACTICAL HINTS FROM COUSIN JONATHAN.

(*Continued from page* 150.)

Mr. G. W. Demaree says, those about to start bee-keeping on an extensive scale should select the most suitable location. Then he goes into the most difficult question of the

BEST HIVE,

which really means the one he is most used to; but he insists that hives must be light, substantial, and capable of being 'tiered,' adding the

'TIERING UP'

is essential to the largest yield of the best quality of honey. The best bees, he says, are the first crosses between the Italians and the blacks. To successfully winter and have stocks strong in spring, they must have

PLENTY OF STORES,

so that they require no interference till they begin to gather honey and pollen in early spring. Then all upward ventilation should cease, as bees require plenty of water for breeding, and the moisture will do no harm, but, on the contrary, be an advantage.

SECTION CASES

should be put on before the bees have filled the brood-nest with honey, and partly built-out sections from the previous year should be pared down, till the cells are only half an inch deep, to give satisfactory results. He also advocates leaving the honey on the hive sufficiently long to be

WELL RIPENED,

and that all should take pains to build up a home honey-market, and not glut the great cities and towns and bring down the price.

Mr. Eugene Secor says, Inferior honey is as great a bane to bee-keepers as adulterated. Most of the blame for the

INFERIOR HONEY

he lays at the door of the extractor in the hands of the novice and inexperienced, who instead of honey extract nectar. 'Instead of a rich, oily, aromatic delicacy, whose fragrant memories will linger long after the joy has passed, he has some sweetened water that will hasten to convert itself into vinegar, as if ashamed to attempt to counterfeit what it can never equal.'

HONEY TO SELL WELL

must be well ripened, and put up so attractively that the purchaser will delight to take it home when he or she has company to tea.

Dr. C. C. Miller has discovered that every producer should not only use

THE SIZE SECTION

that he can sell best, but stick to one size, and not change without a reason, nor try to work two or three different sizes. The doctor also writes about

OVERSTOCKING,

trying to settle the question as to how many stocks it is profitable to run in one apiary. He finds it hard to fix the number as there are so many factors to be taken into consideration, and at last sets it down as somewhere between 75 and 125 stocks—a pretty wide range, as he admits.

Mr. Henry Alley, *the manager*, as the editor of *Api* modestly styles himself, comes last. He also writes about overstocking, recommending bee-keepers to feel their way slowly into the capabilities of their district. He also gives a few hints about developing a

HOME MARKET,

which are very practical and well put. To find a veteran of thirty years' standing recommending experimenting need not surprise us, especially in the way of

IMPROVING THE STRAIN

of bees and building up colonies in spring. Foul brood, he says, 'stamp out' with merciless vigour—bees, combs, hives, and all, and start with a fresh lot of bees from a distance. The best

ARTIFICIAL POLLEN

for feeding bees in early spring, he says, is wheat-flour. He is unfortunate in being four miles from the nearest bee-keeper, as he recommends all bee-keepers

TO BE SOCIABLE,

and meet as often as possible, and talk over the best ways of wintering bees, marketing honey, the best hives, &c. &c., which certainly is the best advice that we can endorse in closing these lengthy extracts.—AMATEUR EXPERT.

USEFUL HINTS.

What more can we say of the weather? The chief topic of conversation—the one subject of which Englishmen never tire? and truly our climate affords just cause. But of late the extraordinary vagaries permitted by Æolus and other responsible deities have not been confined to our island home. Europe, even to its remotest corners, and America, the land of 'blizzards,' have been alike visited by '*Africusque, Eurusque, Notusque;*' and blinding blizzards, with mountains of driven snow, have prevailed everywhere to the discomfort of all, and sounding, alas! the death-knell of many. And what about our bees in all this hubbub and turmoil of the storm-gods? Doubtless many a colony will fail to 'put in an appearance' when May with her floral inducements fain would entice them forth to sip her ambrosial dainties. For strong colonies, well provisioned, in strong, well-built hives, we have no fear; but the weak ones, located in the modern, cheap (?) 'tuppenny-'apenny-'ives' must assuredly 'go to the wall.' 'Penny-wise and pound foolish' is still too much the order of the day, which we fear many will find out to their cost. 'Right here' (Am.) let us ask a question: What *is* the derivation of the word 'Blizzard?' We have sought all our dictionaries—some half-dozen—through and through, and in only one (Nuttall's) do we find the word given, and there its *meaning* only, *sic:* 'A sudden, violent, cold snowstorm [U.S.]' We 'guess' the derivation to be thus traced: Blind (blink, blinker), blinder, bliudzer, blidzard, blizzard—meaning literally a 'blinder.' Just as our word 'blinkard' means one who blinks, so 'blizzard' will mean a storm which blinds or causes to blink. Pardon the digression.

Feeding, after the late severe weather, is of the utmost importance, and must not be postponed for an hour. Before the advent of this latter 'cold spell' bees had commenced breeding, and serious inroads had been made upon their store. Now, with many colonies, a supply or non-supply is a matter of life or death, and those which show in largest numbers on a bright, sunny day are probably as near starvation point, or nearer, than those which scarcely show at all. The more mouths the greater the consumption of food at this season. Often have we found our most populous colonies semi-comatose—sleepy, sluggish, languid—and at death's door in the months of April and May from the absence of food in hive and field. Let the food now be syrup, made from loaf sugar or granulated sugar of any kind, but it is not economical to buy the low-priced sugars. The following is a good recipe for syrup for spring feeding:—

White loaf sugar	5 pounds.
Water	3 pints.
Vinegar	1 tablespoonful.
Salt	1 "
Salicylic acid solution	1 "

The salicylic acid solution is prepared thus:—

Salicylic acid	1 ounce.
Soda borax	1 "
Water	4 pints.

Mix with warm water, and shake well in a large stone bottle. Syrup should never be given without this solution, which is an effectual preventive of foul brood, generally speaking. Feed at the top of the hive, to prevent robbing. Any cottager may easily manufacture a bottle-feeder for himself. Take a block of wood, four inches square and one inch thick, with an auger-hole in its centre large enough to receive the mouth of an ordinary wide-mouthed pickle-bottle. Tack a piece of stout canvas over one side of the block, and place it (canvas side downwards) on the feed-hole. The pickle-bottle, filled with syrup, and having a piece of cheese-cloth tied over the mouth, is then inverted, and its neck inserted in the hole in the block, and we have a perfect feeder which cannot leak, and from which the bees can take food as required. No shovel is required when inverting the bottle. An excellent food, used for queen-cages, and by many preferred to syrup for early spring feeding, is the followiug:—

Powdered sugar (confectioners' 'frosting')	5 lbs.
Liquid honey (warm)	1 lb.

Well kneaded together for some time, until perfectly mixed. Two pounds, spread on cheese-cloth and covered with stiff paper, is laid on the frames, under the quilts, and will last an average colony about a week at this season.

Our advice is,—Feed all colonies, weak and strong. If there is a superabundance of honey in any hive, by uncapping a few cells now and then, turning aside the quilt, without further disturbance, the bees are as effectually stimulated as by syrup feeding. Pollen supply must be continued, as recommended in last 'Hints,' for which see 'Manipulation' also. Iteration of the same advice week after week is wearisome to all, and reference to late 'Hints' can always be made by those who file their *Journals*. For this reason, we are very anxious that every bee-keeping cottager should have brought to his door our monthly *Adviser* to keep for *his own*, and thus have it in his power to refer at any moment to any particular piece of advice or suggestion. We all know how much anything which we can really call *our own* is prized. What a touch of nature is there in the old nursery rhyme:—

> 'Oh, pretty new doll, it looks fine,
> And its cheeks are all covered with red;
> Oh, *pray*, may it *always* be *mine*,
> And, *pray*, may I take it to bed?'

Changing Hives.—When making the first spring examinations it is well, if the hives have been fouled by dysentery, to substitute clean, dry ones in place of the damp, dirty ones. This is easily accomplished, thus:—Remove the hive under examination from its stand—or stand and hive altogether, as the case may be—a few feet backwards, or sideways, and place the clean, dry, empty hive exactly where it stood. Smear the entrance of the occupied hive with carbolic solution and strip off the quilts, quickly replacing them by the carbolised cloth. Remove the frames which are unoccupied by bees, one by one, to the same position in the new hive as they occupied in the old one. Now you have the brood-nest alone left. Remove this bodily by placing beneath the ends of the frames pieces of lath, or strips of wood, and, carrying it to the new hive, insert it as it was before. We have often performed this operation on a fine evening in April without causing a dozen bees to take wing, and seemingly without the bees knowing that any operation at all had been performed upon them or their hive. Let the old hives be scraped, cleaned, and thoroughly disinfected by washing with carbolic-acid solution — 1 oz. of acid to 1 pint of warm water — then dried, and placed ready for further use.

Confining Bees to as many combs only as they can fairly cover is certainly advantageous, especially in the case of weak colonies. Their domain can be enlarged at pleasure, as required, by moving back division-boards, on either side, and inserting combs, one by one, at intervals longer or shorter as demanded.

Uniting weak colonies has never availed much in our hands; but of course much depends upon the queen, as dwindling is often caused by an unprolific or aged queen. We prefer taking a frame of brood from our *strongest* colony, and placing it in the centre of a moderately weak one; but this must not be done too early, before there are sufficient bees to brood it well. Very weak colonies are not worth the trouble or expense of nursing. By this we mean those which cover a couple of frames only. If such possess a good queen it will be best to place her at

the head of another colony, whose queen requires to be superseded, or to keep her at the head of a nucleus in case of further need. Queenless colonies should be united to those having fertile queens and requiring bees.

Continue to keep all hives well protected from cold. Where the enamel quilts have not been given, they should be supplied at the first opportunity, and covered with several other quilts, of felt or carpet, chaff-cushions, &c. Warmth now, to breeding colonies, being of the greatest importance.

Olla Podrida, &c.—In consequence of going to press somewhat earlier than usual—in anticipation of the Easter holidays—we are compelled to omit our notes under this head, but shall hope to return to the subjects of Messrs. Woodley, Boyes, and Godfrey's courteous letters, at no very distant date. Meanwhile, we beg to assure Mr. Boyes that we have not the slightest wish to apply a 'sauce' to Mr. Woodley and to withhold the same from Mr. Webster; albeit, so far from classing these gentlemen under the title *anserine* we consider them amongst the foremost of modern apiarists.

As regards Italians and hybrids *versus* blacks, our opinion has been formed on a twenty-five years' experience. And since we do not plead guilty to riding a hobby, we do not see how it can have run away with us.

According to Mr. Gradgrind's dictum, 'Facts are stubborn things,' and on these, so far as they have come within our own knowledge, our foundation is laid and our edifice raised.

Selected Query.

[6.]—*If only starters, two or three inches deep, are used instead of whole sheets of foundation, in the brood-nest, how is the production of drone-comb prevented?*

By preventing (if possible) the too-rapid incoming of honey, naturally the formation of drone-comb is, in a sense, accidental, depending on the honey-flow — if meagre, the bees will build worker-cells as a rule; but a glut lasting a few days will cause them to build store, or drone-cells to receive it.—C. N. Abbott.

By placing the frames at a distance of 1¼ in. from centre to centre, instead of the usual distance of 1½ in., and by confining the bees to as many frames only as they can cover, giving more room by adding frames as required, in the case of newly-hived swarms.—George Raynor.

By placing the starters 1¼ in. distence, and having colonies or swarms in a normal state (with the queen in prime condition) to carry out the work. Once in our experience we set up a strong swarm, which (then unknown to us) was headed by a virgin queen. Next morning's examination showed us drone-cells worked, at the 1¼ distance, upon worker foundation. My astonishment revealed the probable cause, and I now espied the slim virgin rushing about 'all life and gay.' A frame of hatching brood was given, and the hive well marked for the queen's return from mating. Forty-eight hours after I again examined, and found the queen had mated, and the bees, with their instinctive knowledge of the fact, had returned to worker-cell production. My super crates were placed, and all went well. I mention this to prove 'No rule without exception.'—John H. Howard, *Holme, Peterborough.*

I have never tried starters for many years, so cannot say.—John Walton.

I am unacquainted with any way, if the arrangements are of a normal kind. Possibly crowding the frames closer together might act as a preventative, but I am not prepared to say that it would.—J. Garratt.

I do not think it can certainly be prevented; but if only a sufficient number of frames are given for the bees to cluster upon and entirely cover, in the first instance, provided food is coming in, either naturally or artificially, *regularly* and *not too fast*, while comb-building is going on, worker comb will probably fill the frames. A swarm usually builds sufficient worker comb for the bees to cover, and then they surround their brood-nest with drone-comb. Hence the advisability of having large swarms and crowding the hive as much as possible in the first instance. As soon as the frames are all built out the bees will gladly avail themselves of surplus room, where, perhaps, drone-comb will not be an objection. Swarms headed by young queens do not appear to be so anxious to build drone-comb as those headed by older ones.—M. L. Gayton, *Much Hadham.*

If starters only be used in the frames it is absolutely necessary that they, the starters, should not be placed more than 1¼ in. apart to prevent drone-comb being built.—S. J. Baldwin.

By keeping the frames 1¼ in. from centre to centre, using Mr. W. B. Carr's metal ends, or those made by Mr. Godman, which obtained a medal at Newcastle, either of which will keep the frames 1½ or 1¼ in. from centre to centre as required.—John M. Hooker.

The bees are sure to commence with worker-comb, and so long as they continue to build without a check they will not build drone-cells, but when they stop building they will not generally recommence until they are short of storage room, when they are liable to build drone-comb. Therefore they should be fed in bad weather till the hive is filled with comb, but it is best to use old foundation.—J. A. Abbott.

By giving only a part of frames at first, then inserting the remainder as required in centre of hive, I have found that some swarms build more drone comb than others treated on same lines, though I cannot say yet if it is an hereditary propensity or the result of some occult influences.—W. Woodley.

ASSOCIATIONS.

STAFFORDSHIRE BEE-KEEPERS' ASSOCIATION.

The Annual Meeting of the Staffordshire County Bee-keepers' Association was held on Thursday, March 15th, in the Guildhall, Stafford. Major-General Buller presided, and about forty members were present, including Mr. A. H. Heath (the Hon. Sec.), the Revs. J. D. Glennie, A. R. Alsop, and G. R. Bailey, Messrs. W. B. Yarde, Lieut.-Col. Mort, H. H. Pratt, J. R. Critchlow, Elihu Clowes, H. Wood, A. W. Rollins (expert of the Association), &c.

Mr. Heath read the Annual Report, as follows:—'The work of the Association during the past year has been carried out on much the same lines as in the previous four years of the Association's career, commencing in April last with the spring tours of the experts, Messrs. Rollins and Clowes, in the south and north of the county respectively. 141 members were visited, 151 skeps and 482 bar-frame hives were examined; and the cost of the tours was 16*l.* 17*s.* 10½*d.* In the autumn the experts visited 153 members, examining 172 skeps and 572 bar-frame hives, and the cost of the tours was 19*l.* 4*s.* 9½*d.* Thus the average cost per member visited in the spring tour was 2*s.* 4*d.*, and in the autumn tour 2*s.* 6*d.*

'From their reports we are led to believe that bee-keeping in Staffordshire is carried on on the most approved and scientific principles. The one feature which is unsatisfactory is the prevalence of foul brood in certain districts. This is a serious matter, and should occupy the attention of all bee-keepers in districts where the disease exists; the cures for it are well known, and

should be applied without delay, so that the infection may not be carried into every quarter of the county.

'The bee-tent was engaged at eight shows or fêtes, and left a balance in hand of 12*l.* 4*s.* 1*d.*, being a decrease of upwards of 2*l.* on the previous year's profits.

'The annual show was held at Burslem on September 7th and 8th, in connexion with the Staffordshire Agricultural Society's show, and was by far the most successful held under our auspices. The entries were more numerous, and the exhibits were throughout of the highest class. There were ninety entries in ten classes, and over 13*l.* was offered in prizes. The exhibition of honey in classes for the best display of honey in any form, open to members of the Association, was quite up to the standard of open exhibitions, and the honey produced in classes confined to artizans and agricultural labourers was most encouraging. If agricultural labourers could be persuaded to take the same interest in bee-keeping as Edward Richards of Wrottesley Lodge, near Wolverhampton, they would find no difficulty in paying their rent, and their subscription to the Association would prove to be a very good investment. The arrangements for the show were carried out in the most satisfactory manner. Mr. J. M. Hooker officiated as judge, and Mr. T. B. Blow gave a series of lectures in the bee-tent, which was fairly well patronised on both days.

'The *Bee Journal* has been circulated among about one hundred applicants during the past year in the various districts by Messrs. G. Farrington, E. E. Crisp, J. R. Critchlow, E. Joberns, and Z. Cartwright—fifteen copies weekly. The Committee have decided that in future the monthly edition, which has been brought out since March 1st, shall be circulated, notice of which will be given to members on the earliest opportunity.

'Four committee meetings have been held during the past year, and all the members of the committee are eligible for re-election with the exception of Rev. R. Rigden and Messrs. Edward Clowes and C. Wilson, who have retired.

'Some members present may remember the spring invasion of the county by Mr. S. J. Baldwin, under the B. B. K. A.'s flag in 1883. His object was to make known to us the advantages we could derive from a scientific method of keeping bees, and at that time, when honey was worth 2*s.* per pound, how it could be carried out with reasonable prospect of remuneration or *considerable profit*. The result of his efforts was that, at the first meeting of the S. C. B. K. A., held in April of that year (that veteran bee-keeper, the Rev. J. D. Glennie, in the chair), I announced that we had made a start, and that 112 members' names were on the list. I need not remind you how quickly our numbers increased, and how honey—so called, a questionable article of food at that time—has improved in quality, and how much the competition we have around has brought down the price; perhaps nothing testifies to the efficacy of our work so forcibly as these facts. But having so spread a knowledge of bee-keeping in the county among those who have come under our care, it seems to me that our efforts in future should be carried rather into districts at present unsweetened by our labours, and that the work done should be well within our financial capacity.

'The number of members on the books at the commencement of 1887 was 485; a thorough weeding of the list leaves us with only 325 at the present time. I do not think that on account of this reduction we shall find our subscription any the less, but so far our income has not come up to our expenditure; and in future, the Committee will have to consider the means at their disposal, and must make the most satisfactory use of them in carrying out the objects of the Association.'

The Treasurer's statement was next read, showing a balance due to the treasurer of 15*l.* 8*s.* 5*d.*

The officers and committee were re-elected, with the exception of those mentioned above, with the addition of Mr. E. W. Turner of Stafford, and Mr. W. B. Yarde (H. M. Inspector of Schools) of Gnosall.

An alteration in Rule VI., agreed on by the Committee, was proposed by the Rev. G. R. Bailey, and seconded by Mr. T. Bailey, and, after some discussion, was carried. The rule reads: 'All subscriptions shall be payable in advance on January 1st, and shall be considered in arrear if not paid on 1st of May following.' For the words, 'shall be considered in arrear,' &c., was substituted: 'All members whose subscriptions are unpaid on June 24th shall cease to receive the benefits of the Association until the subscription be paid.' Mr. Bailey stated that the great difficulty the Committee had to contend with was getting in the subscriptions, as many members who received the benefits of the Association took not the slightest notice of printed applications, and it was quite impossible for the district secretaries to apply personally to all the members.

Mr. T. Bailey, a working-man member, considered that six months' grace ought to be sufficient for anybody.

At the conclusion of the meeting two hives made by Mr. S. B. Fox, of Maer, provided by the Association, and a Benthall crate of sections, made by Mr. Rollins, and presented by the hon. sec., were drawn for, and were won by Mr. W. Stendall, Rodbaston Hall, Penkridge, Mr. W. Blood, Lichfield, and the Rev. A. R. Alsop, Bednall.

The meeting concluded with votes of thanks to the Chairman, the Hon. Sec., officers, and committee, and to the Mayor of Stafford for the use of the Hall.

NORTHAMPTONSHIRE BEE-KEEPERS' ASSOCIATION.

At a special meeting of the Committee of the N. B. K. A., held in All Saints' Schools, Northampton, on Saturday, March 17th, called to consider the advisability of supplying the *Bee-keepers' Adviser* gratis to members or for a slight remuneration, it was decided to send the *Bee-keepers' Adviser* gratis to members who subscribe 2*s.* 6*d.* and upwards, and to cottagers paying a subscription of 1*s.* 8*d.* per annum in advance (to all members who desire to have the *Adviser*). And it is earnestly hoped that by making this concession the Association will gain many new members, especially among the artisan and cottager bee-keepers, who at present hold aloof from the Association, but who, indirectly, are reaping a benefit through the diffusion of the knowledge of advanced bee-keeping made known through the Associations, and those members who devote time and energy in furthering the aims of the Association.

All who desire to have the *Adviser* are requested to send their subscriptions to the Hon. Secretary, Mr. R. Hefford, Boughton, Northampton, or the several district secretaries at once.

It is also advisable to state that any member of the N. B. K. A. can have the *B. B. J.* through the Association at cost price, viz., 8*s.* 8*d.* per annum, paid in advance—half-yearly if preferred. By arrangement the *Journal* is sent direct to subscribers from the office weekly, causing no delay.—A. T. Adams, *District Secretary.*

LANCASHIRE AND CHESHIRE BEE-KEEPERS' ASSOCIATION.

The Committee of the Lancashire and Cheshire Bee-keepers' Association held their first meeting of the year at their room, 2 South John Street, Liverpool, on the 19th March, 1888, when twelve members put in an appearance and unanimously elected the Rev. J. F. Buckler, of Bedston Rectory, the Chairman for the year.

After passing the accounts to date, and arranging several details of work for the year, there was a discus-

sion whether it was advisable to make a county competition a feature of the show to be held in conjunction with the Royal Manchester, Liverpool, and North Lancashire Agricultural Show to be held at Lancaster from the 5th to the 7th of September, 1888, when it was decided to set apart 15*l.* to be offered in prizes for the best exhibits of honey staged by Counties affiliated with the B. B. K. A. — W. Lees McClure, *Hon. Secretary, The Lathams, Prescot, March 19th.*

WORCESTERSHIRE BEE-KEEPERS' ASSOCIATION.

We are glad to be able to announce that Mr. E. Davenport, the expert to the above Association, who, for private reasons, sent in his resignation to the hon. sec., has reconsidered his position, and will continue his duties for the current year. His address will be, as before, at Tontine Buildings, Stockport.

Foreign.

BELGIUM.

If we are to judge from the tenour of a communication which has reached the *Revue Internationale d'Apiculture* from M. Karel de Kesel of Amongies-les-Renaix, Belgium is at last not only becoming alive to the importance of apiculture as a means of improving the condition of farmers and others engaged in agricultural pursuits, but is about to take such practical steps as will place it at no distant date in a line with other European countries. We cannot do better, therefore, than place before our readers a translation of M. Karel de Kesel's communication as published in the *Revue Internationale d'Apiculture*, and which is to the following effect:—

'I am in a position to inform you that our Minister of Agriculture has just approved a report upon *Practical means for spreading the knowledge of keeping bees in our country*, and decided to at once give effect to the following two recommendations, viz.:—

'First.—To hold an International Bee Exhibition in Brussels in the course of the present year, of which I will send you later on the prospectus.

'Second.—To order fifty lectures to be given in the most suitable Belgian districts for successful bee-keeping.

'In order to spread as much as possible the knowledge of bee-keeping it has been decided that for this year no more than one lecture is to be given in each district. This first lecture will deal merely upon the rudiments of bee-keeping and manipulating, so as to initiate into correct principles those who have already acquired a natural instinct in the management of bees.

'The lecturer will be furnished with horse and trap. In these he will carry about with him, among other things, a stock of bees to be used for practical demonstrations at his lectures. An adequate amount of publicity will be given, to the effect that *a bee expert is about to arrive with an ambulant apiary*, that he will bring with him bee-hives on the moveable bar-frame principle, that the combs will be removed from and replaced into the hive at pleasure, and that the bees will be seen working through glass. Mention will also be made that the lecturer will bring with him bees of several breeds, as well as bee-hives, from which as many as 75 kilos of honey can be obtained in favourable seasons; and that, in fact, he will show them sundry bee-furniture of the latest invention, &c. It will also be made known that editors will be supplied gratis with a summary of the lectures, together with a lithographic design of an improved bee-hive, together with explanations and a list of the most approved books on bee-keeping. The explanations and documents which you have sent me, showing how a Bee Association could best be organized in Belgium, will be of great assistance to me. Again M. Vernieuwe, attached to our Ministry of Agriculture, himself an amateur bee-keeper, has received the particulars which you and Mr. Cowan have sent him.

'We shall soon send out to all the bee-keepers known in Belgium an invitation to a general meeting, in order to agree upon the main point of a proposed association.

'I have perused over and over again all the numbers of your *Revue Internationale d'Apiculture* for 1887. For me it has been a very useful and encouraging reading. For years I have had to do as best I could with my bees without the assistance of a reliable guide; hence it is only since I adopted, three years ago, large hives with strong colonies that I have been able to obtain satisfactory results. When I look upon the past I cannot help thinking of the many things that I have learned at my cost, and of the money that I could have saved if I had known of the existence of the *Revue Internationale d'Apiculture* from the first. (Signed) Karel de Kesel.'

ITALY.

The Board of Management of the Central Bee Association held recently a meeting at their head office at Milan for the purpose of electing and reappointing honorary representatives at home and abroad. Mr. John B. Camaschella, of Forest Hill, S.E., was re-elected representative for Great Britain and its dependencies. Mr. Camaschella has held this honorary appointment ever since 1877.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

THE ODOUR OF NECTAR.

[1553.] I dare say much of what I say on this subject will interest those who have made horticulture a hobby rather than bee-keepers, whom it affects only in a slight degree, and that little is purely of a scientific character.

We take it for granted that the odour of flowers is the odour of the nectar, and that it is given off by the plant at certain parts of the day or night, more at one time than another, according to the surrounding atmospheric conditions and in proportion as it requires the visits of such animals as are useful to it in securing cross-fertilisation, for whose services the plant is bidding, with its seductively attractive perfume and its deliciously flavoured food, the nectar.

It is only in keeping with a law of nature (affecting not alone individuals of the vegetable kingdom) that peculiar degrees of heat and moisture, together with certain unknown electrical currents or conditions, perhaps also accompanied by seismic fluctuations, produce activity in those parts of flowers which are destined to play an important part in securing for its kind a future on the earth. The ovaries, the pistil, the stigmatic surface, the anthers and pollen-grains, are all distinctly acted upon by the suitable surrounding conditions, and in the same measure is nectar secretion copious when an agitated, irritated state is produced by such sur-

roundings. The nectarlike, perfume-laden breeze has only become so by gently brushing about the pendent catkins and flowers against leaves and branches until the agitation stimulates an extraordinary nectar flow or transudation through the cells of the nectaries. In order to test the question as to irritation increasing nectar flow, it is only necessary to fillip with the finger the stem of a perfume-bearing plant in bloom, and the increased scent is distinctly perceptible; the nectar will continue to be secreted by the flower so long as the atmospheric conditions remain suitable, or until its seed has been fertilised. A very interesting study may be made of the mechanical contrivances found on various plants, which are used by them to assist or prevent insects visiting the parts of flowers where nectar is lodged. Amongst these protective appliances I may name prickles, hairs, and sticky exudations, and these are generally found at the nodes or parts where branches join the stem, where branchlets join branches, and where leaf-stalks join the branchlets.

Nature is far more sparing of original elements than one would at first suppose, but she is multitudinous in her combinations of those elements; products are given which in no manner resemble the parentage. In colour, every hue is made by the intermixing of red, blue, and yellow; every tint, from rosy dawn to golden sunset. In music we have a similar trinity of notes, the intermediate shades and combinations of which give us the the grand harmonious notes of thunder rolling amongst the mountain-tops, the seemingly discordant screeching of the storm rushing through the forest or beating its waves of wind and sea against Nature's rugged breast; the sighing of the wind amongst the tree-tops, the weird noises through the night of the myriads of falling pine-cones, the startling cracking of the tree trunks as the rising sap of spring bursts the bark and splits the stems; these, down to 'the utterances of the insects,' merely vary in combination or intensity, the few simple primaries of sound formation. In the sphere of chemistry the compounds of carbon, hydrogen, and oxygen, are innumerable, and have become a distinct branch of study.

We are shown how to obtain the most dazzling tints from coal-tar, the brilliant aniline dyes locked up in a piece of coal. We are obtaining from the same source most enticing flavours of raspberry, strawberry, pine-apple, pear, apple, &c., sweetened with saccharine, itself a hundred times sweeter than sugar; perfumes follow on in the same line, and all from a bit of Nature's carbon compound; and here we come back to the nectar and its odour. Now, instead of being at the trouble—to say nothing of the difficulty—of mixing various nectars in order to obtain new combinations, let us experiment with sprigs of the flowers themselves; you may then, perhaps, agree with me in my assertion that Nature is just as chary and economical in her elementary perfumes of nectar as she is in those other objects which appeal to other senses besides smell and taste—I mean colour and sound. The perfumer uses very few bases, but he builds up new scents (to which he gives startling and attractive names) by scientific combinations alone. Let us do this for ourselves with a sprig each of mignonette, wallflower, and garden-pink; these three, or, indeed, any other three, will give a blend, in which—if tested fairly—it is most difficult to recognise the separate components; so it is with our honey, it is only recognisable when one component predominates over another.

In order to show how the same flower (nectar) scents repeat themselves throughout nature I will give you a list of notes I made on February 20th, 1883, comprising plants—principally orchids—from all round the belt of the earth, with the associations they gave me to other odours.

Lælia anceps (orchid), scent of honey.
Cattleya Mossiæ (orchid), two petals, scent of honey (lip no scent).
Hyacinth (pale blue), like a vanilla pod or like Stanhopea Tirgina (orchid).
Zygopetalum Mackayi (orchid), lilac-coloured, scented like lilac.
Odontoglossum Halli (orchid), like a beanfield.
Orange flower, stamens and petals like jasmine.
Orange flower, stigma, of orange.
Odontoglossum pulchellum majus (orchid), of May blossom.
Mormodes pardinum (orchid), of sandal-wood.
Dendrobium heterocarpum (orchid), of Windsor soap.
Cœlogyne cristata (orchid), of May blossom.
Cytissus fragrans (yellow), like Cattleya citrina (an orchid, also yellow).
Cattleya citrina (orchid), of lemon or citron.
Dendrobium crystallinum (orchid), of heather honey.
Epidendrum fragrans (orchid), of plum stone kernels or hydrocyanic acid.
Epidendrum virens (orchid), of chopped hay, slightly of bergamot (like a manger).
Lælia albida (orchid), of sweet honey.
Pilumna fragrans (orchid), of weak vanilla.
Odontoglossum maculatum (orchid), like Daphne.
Odontoglossum blandum (orchid), disagreeably of jasmine.
Polyanthus narcissus, disagreeably of jasmine.
Orange blossom, disagreeably of jasmine.
Azaleas, of pinks.
Skimmia Japonica, of Daphne.
Lily of valley, weak Daphne.
Pancratium caribbæum, sweet Daphne indica.
Crinum Careyanum, vanilla.
Dendrobium fimbriatum (orchid), red inky or creasote.
Dendrobium primulinum (orchid), lilac and honey.
Dendrobium Wardianum (orchid), wild rose.
Phalænopsis Schilleriana (orchid), of daphne indica and violets.
Cœlogyne flaccida (orchid), urine of horses.
Gleandra Devoniana (orchid), heather.

So it is, almost throughout the floral world, the innumerable changes are rung on comparatively few bells. With us, our honey, mixed by the bees, changes its character with almost every section where one kind of flower does not strongly predominate in bloom; and in this case, who has not found a friend who simply could not bear the flavour of honey from one source alone, clover, lime, or heather, the intensified flavour of which *per se* is decidedly objectionable? A good mouthful of clover-honey reminds one of the smell of a mill-pond on a hot autumn evening, the lime, like resin or varnish, and a comb of heather highly suggestive of a farmer's boy drying his damp fustian or cord before the fire. Attenuated or blended, I don't care which, the same substance produces on the palate what, without blasphemy, may almost be called a divine sensation.—R. A. H. GRIMSHAW, *Horsforth, near Leeds.*

NEW ARTIFICIAL COMB-FOUNDATION.

[1554.] I have read your article on 'One-side Cell Comb-Foundation,' on page 138 of the *B. B. J.* for this year, with much interest, as I had myself, when in conversation with Mr. Alfred Neighbour some six weeks ago (about Mr. Marshall's invention), suggested that the fixing the foundation at the side of the frame or section would fulfil the objects Mr. Koerbs proposed to obtain.

I think the one-side cell comb-foundation can be readily made by any one having an ordinary comb-foundation mill, which will answer both purposes at a small additional expense. For the one-side foundation, the upper roller in the mill has simply to be taken out and replaced with a smooth one. The sheets of wax are prepared exactly as before. A piece of calico washed free from dressing and dried is placed on the wax on the table, and about half an inch is turned down under the sheet of wax. The handle of the machine is turned round once or twice, to lubricate the under roller, and the wax-

sheet, with the calico on the upper side, is then fed through the mill. Directly the pressure comes on the calico, the end turned under is embedded in the wax, prevented from slipping, and when passed through the machine, comes out with a backing of calico on one side, and the usual impression of foundation on the other.

It can, I think, also be fixed to thin board or cardboard, or anything that will bear the pressure of the rollers. I have not tried to make foundation in this way, not having a mill, but I feel pretty certain it will answer. I hope some of the makers of comb-foundation will experiment a little and say what they think of this plan.

The reason the bees may be expected to build on one side only is that there is no wax on the other to induce them to start building, and as the space between the foundation is about 1½ inches, they will not attempt to insert one.

Nothing but careful experiment will enable us to be certain how the bees will act, and at present no opinion can be formed as to whether or not there is any advantage to be gained.

If the bees will build out the comb and fill it with honey only, combs with a backing will be much stronger, and when extracting, less liable to break, as there will be no weight of honey on the other side of the midrib endeavouring to fly from the centre, tending to break the comb.—John M. Hooker.

BEES FOR PLEASURE AND PROFIT.

[1555.] Seeing in your first number of *Adviser*, which I by chance got hold of, that you would gladly correct any mistakes, &c., and put in shipshape any commentary which you might receive from any cottager, I gladly take the opportunity of giving [my little experience in bee-keeping. I have received very valuable assistance through *Gardening Illustrated*.

I started some six or eight years ago, and of course with the old-fashioned skeps, but I did not succeed, for after a year or two all my bees died, and so I determined to try a bar-frame, so I bought an old one for five shillings as a pattern, as I wanted my bees more for pastime than anything else. I determined to make all my own hives and everything connected with them. And this is how I proceeded: I got an old tea-chest, which is inside measurement 16¼ inches square, then I made a false bottom and cut a slit in one side for an entrance for the bees, 6 inches long by half inch wide. Of course the tea-chest not being thick enough to keep out the winter, makes it require the extra bottom; then I take two pieces of wood (I do not mind about thickness), cut them 16¼ inches long, and 8½ inches deep, and nail them fast inside and outside about one inch from front and back. Of course the front one must have a little taken out at the bottom for an entrance. Then I take two other pieces of wood, 8½ inches deep, and cut them just to fit so that they can be moved backwards and forwards at pleasure. This makes my hive like two boxes, one inside the other, the inside one being about an inch smaller than the other; the advantage of this is I can stuff a piece of sacking, or hay, or sawdust, down the side for winter. Then I make my own frames, I make them of such size first to allow quarter of an inch betwixt the side of the hive and the frame ends so that the bees can pass at the ends of the frames; and I make them 8¼ inches deep: I find I can get seven frames in such a hive, which is sufficient to keep the stock through the winter. I had forgotten the landing stage. Well, I nail a piece of wood in front for landing, and a piece above slanting downwards to shade and cast off the wet, then I make ends for the roof and take three pieces of board like most wooden hives one sees, and my hive is complete except the painting. Of course it requires a certain amount of putty, and with two coats of paint I can assure you it is not at all a bad hive, and it costs me next to nothing, and there is plenty of room to put sections on one above the other, and making these appliances is a far better occupation on a winter evening than going to a public-house.

Well, after I had made this, I bought a swarm the beginning of June 1886, for which I paid twelve shillings, and put it in. The first year I took nine pounds of honey from the bees, and showed it at our local show, got a prize of two shillings, and sold my honey for nine more shillings. I thought I was getting on famously.

When 1887 came I had my one stock strong and healthy, and on June 15 it threw out a swarm; and such a swarm it was, it weighed six pounds of bees good weight, and I hived them in another of my own manufacture, and let them stand about a fortnight and put on some sections, which were soon filled; and from my swarm I took twenty-four sections and a glass; the glass weighed a little over four pounds, and I sold from both my hives over two pounds worth of honey at tenpence a pound, and have both my stocks strong and healthy ready for 1888.—A Cottager.

ARTIFICIAL FECUNDATION.

[1556.] As a skilful bee-keeper here in Denmark Mr. P. O. Berg, Torring) has in the last two seasons tried some very interesting experiments in this direction, I shall relate these to you, as they may, perhaps, lead to some very important discoveries on this head. Mr. Berg's experiments were made at the same time as Professor MacLain's in North America, but without his knowing the latter, and the former are in several respects better arranged.

Mr. Berg has not caught his drones among the multitude of drones in a strong stock (as did MacLain), but *at the entrance of the hive*, at the moment when the drone intended to take a wedding flight. This accounts for MacLain's complaint that most of his drones were not fit for the purpose, while with Berg every one of his was suitable for fecundation. He seizes the maiden queen by her wings with the thumb and forefinger of the left hand. In this situation the queen will bend her abdomen downwards towards the thorax. Then he seizes with the right hand thumb and forefinger the drone on both sides of the thorax, and cautiously pressing the abdomen, the desired effect is produced, and fecundation may be accomplished. Mr. Berg tells us that the queen when released will disengage herself in some fifteen minutes. He has in this manner artificially fecundated six queens in the season 1886, and four in the last season, and in all ten cases with an excellent result.

As these very remarkable experiments, *if they are confirmed*, undoubtedly will lead to very important progress in apiculture—that is, to an easier and more sure fecundation of the queens—I hope that you are willing to acquaint your readers with them through your valuable *Journal*.—Hans Ersley, *Editor of the Danish Bee Journal*.

QUEEN-RAISING. (1503.)

[1557.] 'A Cottage Amateur,' in writing on the the above subject, appears anxious to put the matter on a practical footing, so that all may be ready when the host of bee-keepers will be wanting cells and young queens for expected swarms. This is all right, and as it should be; but the next question, 'What will such a comb cost?' is a matter for consideration, the more so as 'A Cottage Amateur' so pointedly refers the question to me, as the writer of the previous article. Now, I am quite willing and ready to quote on learning his *bona fides*, but the mere thought of naming prices in these columns, sacred to correspondence, is enough to shock

any manufacturer, not to mention our courteous editor. If 'A Cottage Amateur' will write his name and place of abode on a post-card, I will then tell him in whose catalogue he can find the prices of 'Wired combs containing brood, eggs, &c.,' first published in 1884. As eggs only are wanted in this case, if he deducts, say, 33⅓ per cent, or one-third from the value of a comb in its normal condition in the brood-nest, he will arrive at a fair price for what is asked. Again, if he wants same comb to contain eggs from different queens—say, Syrian or Cyprian on one side, and Carniolan on the other (and, by the way, this cross will be hard to beat for business)—let him then add one-third to these figures, and he will then arrive at 'What such a comb will cost.'—JOHN EDEY, *St. Neots.*

[This letter should have appeared in our last issue.—ED.]

HONEYED FOOD.

[1558.] The aim of your new venture would, mayhap, be furthered by the gathering together of receipts for eatables in which honey forms a part.

In the hope that you will find room for such, and that others of your readers will add to the stock, I send the following by way of beginning:—

In Miss Gordon-Cumming's *Wanderings in China*, wherein she describes a Chinese dinner, occur 'ham stewed in honey,' and 'pears sliced in honey,' 'crab-apples and chestnuts preserved in honey and dried.' We are not told what kind of pears are used, but our stewing pears seem suitable.

It does not appear whether the *ham* is cured, or stands for *leg;* but perhaps the latter, for we have it, in his own *Confession*, that St. Patrick found fresh pork seasoned with honey so luring that he ate more of it than was good for him. Being on board ship, where they were short of provisions, at last they fell in with a herd of swine, of whom, killing many, they ate their fill, seasoning the meat with an opportune find of wild honey. As might be expected, St. Patrick had night-mare. This was not due to the honey, but to the surfeit of pork to a starved stomach.

Your readers are advised (1) to try such of the Chinese dishes as they have a chance, and (2) to take warning by St. Patrick.—G. O. WRAY, LL.D., *Bedford, March* 22.

DRONES.

[1559.] Since writing my last article I have had the pleasure of seeing the first volume of Mr. Cheshire's admirable contribution to the Physiology of the Honey-bee. Without defining the time when the drone is disposed to mate, Cheshire demonstrates, microscopically, that it must be at least several days old: and my observations show that sexual desire comes much later.

Mahan, as stated in my work, first made the important observation that drones, leaving the hive to mate, have a large supply of honey, which is found on their return to have been almost entirely consumed. I failed to ascertain how many marital excursions drones would average in a single day; but as they are often flying about three hours in favourable weather it is probable that they make three such trips at least. To do this they must consume twice as much honey as a swarming worker that carries off in its honey-sac almost a week's supply. The importance of preventing any overproduction is therefore obvious without any further comment. Let me here make some suggestions to those who aim to exclude all drone-comb from most of their stocks. I say *suggestions*, for, after having been precluded by sickness from the practical management of bees for most of my time during the past fifteen years it would ill become me to speak in too confident a manner.

In limiting the production of drones to just as few as we think will be needed for the fertilisation of our queens, may we not err against that wise precept, 'There is that withholdeth more than is meet, but it tendeth only to want?' It is easy to take for granted, that every bee in a healthy populous colony will do all that it can to enrich its home, even in the entire absence of any drones; so it is easy to assume that every worker in an artificial swarm will work just as well as it would in a natural one; but who, after a large experience with both methods, can deny that, for the production of comb honey at least, the natural swarm has that spur in the head which it never gets from our artificial processes? Is it not reasonable to think, that, for its highest prosperity, every colony of bees should be in a normal, that is to say, a natural condition? What can be more certain, than that strong colonies with few or no drones, in the very height of the honey-harvest, when such colonies show that they crave them so much, are not in a condition which stimulates them to do all that they are capable of doing? Their owner may know that, in the apiary, there are drones enough for all needed purposes; but how is he to impart this formation to his droneless colonies, when, by the fiat of the Creator, every healthy stock seeks to be in a condition that would be best for it, if there were not another family of bees on the face of the whole earth? So far, therefore, from grudging to any colony a goodly number of drones, I prefer to see that one-third of one central comb in each stock hive has choice drone-cells.

I will conclude this article by giving some facts which show that, to ensure the mating of queens, many more drones seem to be needed than are commonly thought enough.

During the period of my observation in 1885, a drought had so cut off the secretion of honey that I had no reason to suppose that any drones could be found for the mating of my queens, except such as I had bred, and kept alive by daily stimulative feeding. For over two weeks I had more than a dozen young queens which flew nearly every day, and some of them, I knew, made several excursions on a single day. I had over two hundred drones, and yet only one of those queens laid any eggs. When the weather became too cool to expect any favourable results, I found, by dissecting the other queens, that none of them had mated; yet when my apiary was largely devoted to queen-breeding, and I had thousands of drones, I had good success at the same season, under circumstances in no respects more favourable.—L. L. LANGSTROTH, *Dayton, Ohio, Feb.* 10. (*Gleanings.*)

CHEAP AND EFFECTUAL FEEDER.

[1560.] Take a common round tin coffee-canister, stick a piece of rough brown paper on the bottom, to give the bees foothold, and with a darning-needle lightly tapped, make a tiny hole (or holes, as required) through the brown-paper and bottom of the canister, place it over the feed-hole in the board, remove the lid of the canister, and pour in syrup as and when required. There is no need to remove the canister to replenish the syrup. It will only have to be taken off if it is required to make more holes, or to stop a hole with a fine wooden peg. Cover the canister with a good-sized flower-pot, with the hole stopped. This answered with the writer last autumn as well as the regular feeders, and cost practically nothing, and it was thought that the hint might be acceptable to those who have to take care of the pence. —T. H. H.

A SMALL COTTISWOLD APIARY.

[1561.] I have been a bee-keeper more or less since March, 1871, also a slight contributor to the *B. B. J.* in its early days. In 1875 I had some forty stocks in Woodbury hives: I had purchased eight Ligurian queens, joining seven successfully, and had bred queens from them, but could not keep them pure. This year

(1875) was fine until June, and they increased fast; then it set in wet until September, and I had to feed them all from July onwards. In the autumn foul brood appeared, and I lost them all; since which I have kept a few stocks of Blacks.

In 1876 I came to the conclusion that the 'Woodbury' would be better deeper, that a strong stock required more brood space; so I experimented on two stocks by deepening the frames to 10½ inches; last summer No. 4 stock, which had wintered on eleven of these frames, and No. 2 on eight, each gave me somewhat over 100 lbs. of honey in 1 lb. and 2 lb. sections and other supers, leaving them a winter supply; besides which No. 2 worked out the three frames of foundation.

Finding these two were my strongest stocks last spring, I lifted up three more and placed similar hives (only containing ten frames instead of eleven, and which I have christened the 'Bannut Hives') under them. They treated the upper ones as supers, and drew out the foundation and filled the Bannut hives with brood and honey, and, so far, have stood the winter well. Besides these five I have one Woodbury containing three driven stocks, and one skep containing one driven in July last; they gave me last season 3 cwt. of honey, the surplus of which I disposed of at 9*d.* per pound. I do not, as a rule, allow them to swarm, and if I want a swarm I make one out of two hives, as recommended by Langstroth. I do not find a ready sale for honey in sections, and generally extract it, leaving stock hives undisturbed.

I make my own hives and appliances, place the hives on separate fixed stands, with loose floor-boards and outside cases fitting over the stands, and very similar to an illustration in *B. B. J.* of April 8th, 1886, on doubling. I keep these outer cases on always, well painted, lowering them to top of hive in autumn. The air circulating round the hive keeps it dry. The hives are not painted, the inside planed, and the outside left rough. The honey-flow last year lasted about five weeks.

My principal object in writing to you is to relate what seems to me an extraordinary occurrence. On the 6th February last, being a fine, warm day, the bees were flying freely; and as I was watching them with great interest I heard the buzz of a drone, and saw one enter No. 2, amongst rather a large flight of young bees; and on 6th inst. I saw another in the same hive, and on the 14th two drones. The queen is one of 1886, and a very prolific one, and the hive well stored.

Last September a small swarm (perhaps a pint of bees) came and settled in a small bush. I put them into a three-frame nucleus hive with some honey, but they would not stay. I hived them three or four times; my bees cleared out the honey, and I found the queen—a very small one—dead. Next day I think most of the bees joined my hives.

I have tried the Ligurian, but did not find them better honey-gatherers than the black; the largest surplus I got from one of them was 70 lbs. in supers; and as to the first cross with the blacks, I had to put on veil and gloves, and still got quite used to the stings; but with the blacks I find a whiff of tobacco or a little carbolic suffice; and I am satisfied with the returns, and then they cost but little.—FRITZ.

A VOICE FROM A COTTAGER.

[1562.] I have been keeping bees for several years on the bar-frame principle, having obtained the book of *Modern Bee-keeping*, and started to work and made all my hives (of course they were rather rough at first, being a bootmaker) from old packing-cases, which I bought cheap, and have been very successful every year obtaining first prizes at several of the shows. The first year I began I think I must have been very venturesome, not having seen any honey in sections or bottled for show. I bought one swarm, took sections off top, and extracted from the lower frames. I entered at the Romsey Horse and Poultry Show, and was fortunate enough to obtain two prizes.

Mr. Editor, I am glad to see we have a journal that will come within the reach of everyone, and, by what I see of your first number, it is likely to be a very useful one. I hope it will be taken in largely. I hope the cottagers will take it in, and well study it and work from it, and see if they cannot find a much better plan than the old sulphur pit. I was pleased to see the account of the Village Blacksmith. In a place like this one has to do the best he can; there not being anyone keeping bees on the bar-frame principle for upwards of twenty miles round. We can get an expert twice in a year by paying a small sum, which one is loth to part with in these times. I have in all twenty stocks, that being my number last year.

Being the most experienced in bee-keeping about here, I go to some of the people round to assist them, and am willing to tell them what little I know. I went to a friend last year to look at some bees just in the height of the honey season, as he was in difficulty about them, the distance being about eight miles. When I reached there and looked into his hives, to my disgust I found some of his hives not made up full of frames, also supers put on, and no covering at all placed over. Some sections were well filled, some 4¼ by 4½ by 2 were filled to the weight of two pounds, no dividers being used, some dividers only half wide enough, some crooked and broken. The bees had taken possession of the roof of the hives, and had put in a lot of honey. I asked him the reason that no coverings had been used. His answer was no one had told him, and also he had not seen any instructions in any book. The clergyman here used to take the *Bee Journal* in, and lent it to me. I thought it a most useful journal, but being too expensive I could not afford to take it in. Do you think that at these shows if a bar-frame hive was shown full of comb and bees and supers on, and show the cottagers how they are managed, it would be of service towards getting them to take to the new method?—VILLAGE SHOEMAKER.

[We think such an exhibition would be of great service at a show, and would be a practical lesson to the spectators.—ED.]

PHOTOGRAPHIC GROUP OF BRITISH BEE-KEEPERS.

Abbott Brothers are preparing a large photographic group of the most eminent bee-keepers in the United Kingdom, and they would be pleased to receive any assistance from those who take an interest in bee-keeping, so that the group may be rendered as representative and as complete as possible.

LECTURE ON BEES AND BEE-KEEPING.—On Monday, March 12th, an instructive and interesting lecture was delivered by Mr. W. J. Anstey (Oxford Secretary of the Oxfordshire Bee-keepers' Association), in the schoolroom, Yarnton. The room was quite full of villagers. The Rev. J. A. Balleine, Vicar, presided. A large supply of appliances were on view, and the lecture was illustrated by diagrams and dissolving views.

LEICESTERSHIRE BEE-KEEPERS' ASSOCIATION.—An interesting lecture in connexion with the above Association was delivered at Sheepshed, near Loughborough, on March 16th, by Mr. J. H. Howard. Mr. Ward occupied the chair. Much interest was shown by a very attentive audience. At the close Mr. W. P. Meadows advocated the cause of the Association and the good work they were doing, and advised all interested in bee-keeping to join, so that more funds might be placed at their disposal, and more lectures, &c., given. The more general use of honey was also advocated, and the advantages it possessed as a food and medicine.

Echoes from the Hives.

York, March 17.—I have done and will do my best to promote the circulation of your monthly *Journal* which was much wanted, and ought be extensively subscribed for.—J. H.

Llanerch, March 18.—Weather exceedingly cold, with north-east wind, and an occasional shower of snow, the bees are kept in; and I think that those hives that have bred freely during February will lose a lot of their brood. During a heavy storm of wind and rain that passed over this county on the 9th instant, some of my hive-covers were blown off and the quilts got wet through, so in giving them dry warm quilts I could not resist the temptation of examining them. They had brood on several frames, one had five frames well covered with brood, several of which were hatching out while I held the frame in my hand. My stocks, fifty in number, have wintered well so far, with the exception of one Italian hive, which is suffering from dysentery. This hive suffered the same last year, and I had to unite it to another, and being in too much of a hurry to unite properly, the other bees (which were blacks) killed all the Italian workers, but kept their queen and killed their own. I find the Italians difficult to winter.—H. P. Jones.

East Yorkshire, March 20.—

Bluff Boreas breathes his bitter, biting, baneful blast,
Blizzarding with icy breath all plants and trees—
Bold Frosty Jack in iron grip holds fast
Benumbed Nature,
Blighting for the present hopes of men and bees.—
F. Boyes.

Honey Cott, Weston, Leamington, March 25.—Since my last, the weather has been very severe, with scarcely any exception. The north-east wind has been like a two-edged sword, cutting every way. In the early part of last week, I was looking round amongst the hives, and noticed one stock with a lot of dead bees at the entrance, I uncovered them, and found I was only just in time to save them from starvation. I took them into my honey place, and got a paraffin stove and warmed it, and poured a little thin warm syrup on the bees, when they soon began to show signs of reviving; then I placed a bottle of syrup over the feed-hole, which was taken down during the night, and next day they were as right as any of the others. In the autumn I had placed them in a hive composed of two sections in height, six inches in depth each of them; and as they were on Standard frames they did not reach the bottom within about three and a half inches: but at the time I placed them in I considered they had honey enough to winter on, it may have been that the empty space caused them to consume more food. At all events I do not think it advisable for so much space to be left. The 21st was a lovely day, causing the bees to be very busy, and they were out very much after water and on the crocuses, also the pea-flour, which they went in for in great numbers. As it was a bit milder I looked over all my other stocks, feeding any that I could not see with sealed food in the combs when I uncovered the quilts, but not separating the combs. I consider I was very fortunate in thus doing, as on Sunday morning we had a deep snow, and it was also very cold, though it soon melted. Then again last night and this morning there was more snow, and as I had looked them over and fed where I considered necessary, I can feel comfortable about them and not be afraid any more that they will be liable to starve. As far as I could see, stocks seem in good order, more especially as we have had such sharp weather. Have been busy of an evening getting extra hives, &c., made.—John Walton.

Hutton, Rudby, Yorkshire, March 26.—We have had very bad weather since January, only had two cleansing flights in about eight weeks. Snowing almost every day, but we have not had very hard frosts. Bees wintered very well so far, I only know of about three or four stocks dying in the district. I wish the weather would break up so as we could make a thorough examination to see if they have plenty of stores.—John Bainbridge.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

A. B.—*Bees proving a Nuisance.*—'In the event of the gentleman and his friends getting stung,' we consider that the question of nuisance should be determined by your views of neighbourly courtesy. It may be that your neighbour has no right to compel you to move your bees, but as in the course of events humans are penetrating into, and reducing, the domains where bees had once the priority of range, the result will be that the latter must succumb and go farther a-field. Your bees, however, may not prove the nuisance you seem to anticipate, and therefore there is no reason to cross the bridge before you reach it.

Joseph Brine.—*Honey-comb Designs.*—You will find a communication, with illustration, on honey-comb designs in *B. B. J.* of May 12th, 1887, from William M'Nally, Glenluce, and in number for May 19th, the advertisement you are in search of, from Richard M'Nally, Longforth, Glenluce.

George E. Corbyn.—1. *Excluder Zinc.*—In Mr. Cowan's pamphlet on *Doubling and Storifying*, he says: 'We have long since discontinued to employ excluder zinc, as we have found it interfered with the work of the bees, and that we always got much more honey without its use than with it. 2. *Carbolic Cloth Recipe.*—1½ ozs. Calvert's No. 5 carbolic acid, 1½ ozs. of glycerine, 1 quart of warm water. The acid and glycerine to be well mixed, and the bottle to be well shaken before using. The cloth should be steeped in the solution, wrung dry, and spread over the hive on removal of the quilt.

H. Inston.—Apply to Mr. J. Huckle (Secretary of the Herts B. K. A.), Kings Langley, Herts.

Alex. Jack.—Sections in travelling by rail have a strange tendency of having the combs broken and separated from the wood. We should advise you to use in future a spring travelling crate: this holds twelve $4\frac{1}{4} \times 4\frac{1}{4} \times 2$ in. sections, and it is fitted up complete with glasses, springs, dividers, &c. Thanks for your kind wishes.

J. J. Shipman.—*Foul Brood Solution.*—The proportions given in *Guide Book* are quite correct. No. 8 being one ounce to one pint of water equal in round numbers to one in twenty. No. 9 is one ounce of No. 8 to one pint of syrup, also one in twenty, consequently there is one of absolute phenol to four ounces of syrup. You can get phenol in crystals for about 3*s.* 6*d.* a pound, and make your own absolute phenol, and then you will be certain to have the proportions right. The crystals are taken by weight, and in all cases of solutions the measures are fluid measures. Twelve ounces of pure phenol crystals dissolved in three ounces of water make the absolute phenol No. 7 in *Guide Book*. We do not know why Mr. Cheshire adopted the plan of introducing the phenol cure in the manner he did, but presume a certain mystery attaches to the preparation, and bee-keepers were obliged to procure it through the medium of dealers, and were supposed to only get the

genuine thing if guaranteed by Mr. Cheshire. We think every bee-keeper should make his own solution, and if he will purchase the pure phenol crystals and carry out our instructions, he will see there is no such mystery about it, and that he will effect a considerable saving, and pocket the profit.

W. W.—*Mode of fixing Foundation.*—Appears a good idea, but turn the prongs the other way.

Llancaiach.—*Doubling.*—We have had excellent results without any excluder zinc between. Some prefer placing the top set at right angles to the lower set. About three-eighths of an inch is sufficient space between upper and lower. The stock referred to can be increased to the extent you wish with *good* management. Uncap some of the honey in the hive to stimulate them to breeding. The pollen referred to can be given to your remaining stocks.

Jo. Ro. Lo.—Answers will appear in our next.

J. Currie.—The comb sent is very suspicious. We should advise you to destroy it.

H. S. H.—*Transferring.*—This is not the time to transfer bees from a skep to a moveable-comb hive, and any interference now they would not get over until quite late in the season. We would strongly recommend that the bees should be left in the skep until they show signs of being crowded, when an artificial swarm could be made or the skep could be placed on the top of the frame-hive (as you suggest), which must have full sheets of foundation in the frames, or they will build a large proportion of drone-comb in them. If the skep is a bought one, or is not in the exact position it is wished the frame-hive to stand, it should at once be placed there just before dark; a piece of board should be put before the hive that the bees leaving may take notice of the altered position of things, and so find the hive on their return. The bees will be better able to keep up the warmth of the skep, and will increase faster than they would in a larger hive, and with increased numbers and fine weather, will soon make up for the delay in being placed in it.

Query.—What is the experience of those who have used 'Heddon's' or other invertible frame-hives, during last season? Give results.—A. T. A.

Received from Messrs. Abbott Brothers two samples of fancy cardboard boxes for holding sections, lined with tinfoil, which will render them honey-tight, and capable of being washed.

American Cloth Quilts.—I have tried these for the first time this winter, and find them not nearly so good as the old bed-tick ones—those colonies wintering under them have lost far more bees from death than those wintered on the old-fashioned plan, especially have large numbers of dead bees been thrown out after severe frosts—out of all proportion to what have been ejected from hives with ordinary quilts and chaff-cushions.—F. Boyes.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Appleton, H. M., 256a Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Burtt, E. J., Stroud Road, Gloucester.
Edey & Son, St. Neots.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley, A. D., 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

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Howard, J H., Holme, Peterborough.
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FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
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Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.

HONEY GLASS MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Blow, T. B., Welwyn, Herts.
Pearson, F., Stockton Heath, Warrington.

NOTICE.

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WITHINSHAW, A., Newcastle, Staffordshire.
WOODLEY, A. D., 26 Donnington Road, Reading.
WREN, L., 139 High Street, Lowestoft.

THE BRITISH BEE JOURNAL

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Editorial, Notices, &c.

IN-AND-IN BREEDING.

'To breed from closely related animal of the same stock.'—WEBSTER.

Our valued correspondent, Mr. W. B. Webster, favoured us recently (pp. 35, 48, 61) with a series of articles on 'Consanguinity,' the gist of his argument being, that it is detrimental to the interests of the bee-keepers whose object is to 'make his bees pay,' if he force (or allow) them to continue inter-breeding in near relationship, and that to prevent as much as possible this consanguinity it is advisable to import (not necessarily from abroad) new blood into the apiary occasionally—*Cela va sans dire.*

Truly our *Journal* has been read to little purpose these many years if it has now become necessary to hammer this fact home to British bee-keepers of 1888.

It is well said that 'Nature abhors self-fertilisation,' and she takes sure steps to prevent it all through the range of animated things, from the bacterium to the elephant, from the jelly-fish to the oak. In the botanical world we are astounded at the devices made use of by the plant, under Providence, to prevent self-fertilisation, or any reasonable approach to consanguinity; and as our honey-bee is perhaps of all agents the most-used cross-fertilising instrument, surely bee-keepers ought to be the last to deny her the benefits of a system by which she confers good upon so many varieties of beautiful and useful plants—benefits palpable to every thinking mind. Even atheists admit the operation of great fundamental laws which pervade the whole of the animal and vegetable kingdoms, one of which is that of which we are speaking, *e.g.*, that in-and-in breeding is deleterious, and cross-breeding beneficial, if we seek for the development of higher powers. When we instance the breeding of domestic animals in support of the in-and-in breeding argument, we stultify ourselves by admitting an imperfect acquaintance with the customs of breeders. The Chillingham wild cattle have been mentioned, but these animals, through continued in-and-in breeding, have degenerated (so we were told by a recent eye-witness) into a herd of only some fifty or sixty comparatively small animals. In breeding short-horns the parentage is so arranged that consanguinity in a near degree is avoided.

The very particular animals themselves, so much prized by connoisseurs, are the results of studied crosses, the original of which are resorted to at times for the re-importation of typical points.

We are sorry to find Mr. W. Woodley the parent of the following remarks on page 90:—'I feel sure that in-and-in breeding *does not deteriorate* the race of English bees as regards their size, working qualities, or prolificness, though it should run on decade after decade, generation after generation;' and we think he will, after a little further investigation, admit his error, or that he misunderstood the meaning of the term in-and-in breeding as used by him and Mr. Webster. It is too late in the day to doubt the firmness of the ground on which Mr. Webster's articles are based, now that we obtain 'honey by the hundredweight' from bees, which, according to excellent authorities, have ceased any longer to be the old English or German brown bee by reason of the numerous importations from abroad.

It is difficult to see how any objection can be taken to Mr. Webster's argument when he distinctly tries to protect himself from misunderstanding by saying on p. 63: 'I do not mean to assert that an apiary in the British lands could be annihilated through the owner neglecting to introduce fresh blood, but each consanguineous cross militates (against) the chances of successful venture in bee-keeping.' Indeed we will go further than our correspondent, and assert that the owner of a single hive of bees would not have to wait many years for the extermination (or, what is quite as bad, the worthlessness to be proved) of his bees, supposing it possible that they could be perfectly isolated. Mr. W. Woodley's case (p. 91) of the old man whose 'father and grandfather in the lone valley,' left him a pure, inbred, immaculate strain of bees, tells somewhat against his argument in our opinion, for they did not 'go forth and multiply' much if, after a century and a half, they only yielded the owner an annual profit of 6*l.*; whereas if an occasional queen had been introduced from beyond them, we suppose that valley would have been full of somebody's bees by this. Then, again, we are led to infer that there was a proximity of stocks, for 'the farmer's widow gave the man a *second* swarm of bees, and we have had them ever since.' This argument is little support in favour of in-and-in breeding unless there be some evidence (beyond that of the old bee-keeper alone) that no other bees had been kept within a radius of six to eight miles during the century and a half.

Mr. F. Boyes (p. 144) gives us one of his usually interesting articles: but we take leave to say he misunderstands the question at issue. The question of keeping to the English bee as it is, or of importing foreign bees, is scarcely germane. Our native bees can be used for cross-fertilisation to any extent without the necessity of importing a single foreign bee; such would not be consanguineous breeding, the germ of Mr. Webster's argument. If Mr. Boyes exchanged any special variety of pigeon with Mr. Webster for breeding with his own, such a mixture could not be called in-breeding, and would be productive of good, indeed it would be a most advantageous infusion of new blood such as is not only advocated in these days of high breeding, but insisted upon; it would be, in fact, just such an importation of fresh

vigour as is advocated by Mr. Webster, and is recognised as one of the canons of scientific bee-keeping. But if we interbreed the two *first* relations of any animal, we probably find some sign of degeneracy at once; and if the system be adhered to, of narrowing the parentage, so to speak, instead of expanding it, for a few generations, we accentuate such signs and enforce either the necessity of infusing new blood, or being face to face with what means ultimate extermination. A good, all-round bee might be produced from an admixture of Ligurian, Carniolan, Cyprian, and English blood in fifty apiaries at once in this country, and in one or fifty years, if such bees were interbred this would not be consanguineous breeding, exactly as our own English bee in its wild or domestic state can intercross without interbreeding.

Mr. Webster's position will be much simplified if we take him to mean that the interbreeding of different *families* of the same (or different) variety of bee is to be commended and advocated, whilst the interbreeding of blood relations (near or remote) is to be deprecated and condemned. Those who do not agree with us on this point find the grossest fault with that All-wise ordering of things which brings about by natural selection 'the survival of the fittest' (that common and much-prostituted phrase). Else there were no necessity for either queen or drone to retain their wings for the purpose of taking their well-known high and wide flights. This great circuit-flying alone shows us the efforts made by the bee to secure cross-fertilisation, as also does the impossibility of obtaining fertile queens in the hive and the difficulty of accomplishing artificial fertilisation. It is also shown in the evident necessity of aërial fertilisation in order that a queen may have a distinctly probable chance of meeting a strange drone.

We have no desire to stifle the discussion in our columns of any moot points, the ventilation of which may give new ideas to our readers, and throw new light into dark corners, but when we see old and valued contributors mistaking the points at issue, and meandering away from the true subject; by this means also somewhat puzzling those who are trying to follow them as to their real meaning, it is only meet and right that the points in dispute should be sifted out and re-iterated in such a manner that there should be no mistake possible on the part of those who are likely to be affected by the nature of the correspondence.

CELLAR AND CLAMP WINTERING OF BEES.

In northern countries, where Winter holds high revel, and Frost seizes everything in its icy grasp, cellar or 'clamp' wintering of bees is an absolute necessity. Nowhere is this system more extensively practised than in our own Colony of Canada, as well as in the northern parts of the United States. We have, fortunately, a winter climate usually of so mild a character that any necessity for bee-keepers to go to the expense of a bee-cellar rarely presents itself. In Canada and the United States the bee-keeper, at the approach of winter, removes all his colonies from their summer stands, and with a deal of labour packs them away in a frost-proof house, leaving them thus until the advent of summer weather; they are then removed, and placed again in the positions occupied by them during the preceding summer. Often it happens that, even with these great precautions, many colonies are lost; the reason of such is mostly an enigma. Many colonies also, after removal, are subject to that bane of bee-keepers, spring dwindling, though the cause of this latter is mostly traced to the unsuitable quality of the food stored by the bees during the preceding autumn.

Until the year 1887 we had no record of the presence of a properly-constructed bee-cellar in England; in this year Mr. W. B. Webster, being introduced when on a lecturing tour to a gentleman, Mr. Greenhalgh of Newton-le-Willows, Lancashire, an old Canadian colonist, was informed by him that he had constructed a cellar upon the same lines as those used in Canada, and of which he had had considerable experience. Mr. Webster, having received an invitation to view this cellar, availed himself of the opportunity, a report of which visit was published in this *Journal* (p. 279 of last volume). Unfortunately, Mr. Greenhalgh neglected to weigh his colonies before placing them in the cellar, but he expressed an opinion, upon removing them in February that there was a scarcely perceptible difference in the weight, perhaps from two to three pounds each. The foregoing led Mr. W. B. Webster to try, during the winter just passed, what would be the effect upon a colony placed in a 'clamp' in much the same manner as potatoes and other roots are preserved in England in what are called 'graves.' For this purpose he dug a circular hole in the earth 3 ft. 6 ins. in diameter, and 1 ft. in depth upon the clay—we should consider this, being damp, rather an unsuitable place for such an experiment, but Mr. Webster had no other—the bees, in a straw skep, were, without floor-board, placed upon four stakes driven into the clay, the ends being four inches above the level of the bottom of hole; over the hive were ranged some rough branches in the form of a dome, then a layer of straw, about two inches, and over all the earth piled to the depth of eighteen inches. This was done on the 10th of last November, and the bees left quite undisturbed and without any ventilation, except that obtained through the porosity of the earth, until a fortnight ago, when, upon removal, they were found in a most flourishing condition, and, that which is of the greatest moment to us in England, had only consumed two pounds of stores during their four and a half months' incarceration.

We do not feel inclined upon these experiments to recommend an universal system of cellar or 'clamp' wintering in England, but to direct attention to a subject that has engaged the attention of apiarists for many years as to the least amount of stores a stock of bees can be safely wintered upon. It has been universally recommended that from 25 to 30 lbs. is the safest amount, though 20 lbs. will mostly suffice for a good colony; but if these same bees were 'clamped,' and only consumed 2 lbs. in four and a half months, they would have more stores than could be consumed before the advent of spring, and as a consequence this surplus might be confiscated by the bee-keeper. The question would then arise, whether the surplus thus obtained would be sufficient to pay the apiarists for, first, the trouble of removal into winter quarters and subsequent placing on summer stands; and, secondly, the expense of building a cellar or constructing 'clamps?'

Our opinion at the present time is that these proceedings, taking into consideration the price of honey, would not pay at least to 'clamp' them, as each year these 'clamps' would have to be renewed, though the expense would simply be the labour. A cellar if properly constructed would last for years, therefore this expense would be distributed over an almost indefinite time.

Our American friends in more southern latitudes rarely cellar their bees, where, owing to the mildness of the climate, they are not necessitated so to do, we may therefore take a hint from them, remembering at the same time that honey fetches in the United States but a little more than half the price it does in England. We will therefore leave this interesting subject to the consideration of our readers, who in making further experiments may discover some method whereby a colony can be deprived of a larger amount of stores, and yet at the same time be safely wintered, thus bringing in a little more profit to the bee-keeper.

BEE-KEEPERS' VOCABULARY;

OR, GLOSSARY OF TECHNICAL AND SCIENTIFIC WORDS USED IN WORKS UPON BEE-KEEPING.

Abdomen. *n.* (*L.* from *abdo*, to conceal.)—The lower part of the body, united to the middle part, or thorax, by a stalk or petiole. It is divided into segments and rings, on the sides of which are small spiracles, by which the insect is enabled to breathe.

Abdominal distension.—This is a swelling of the abdomen produced by the bees eating too much pollen during winter, which they are forced to do to keep up the temperature in hives not properly protected, and are unable to fly and discharge their fæces.

Abdominal plates.—The upper and lower plates of the abdominal rings. In the worker only, there are on each of the ventral plates, except the first and last, two irregular-shaped discs or depressions called 'wax-pockets,' because it is here that the wax produced by the wax-glands collects.

Abdominal rings.—The belts of chitine forming the abdomen, each composed of two plates—the dorsal (on the back) and the ventral (on the lower side). Drones have seven rings, whilst workers and queen have only six.

Abductor muscles. (*L. abduco*, to lead away.)—Those which pull one part of the body from another, in opposition to the adductor muscles, which draw together.

Aberration of instinct. (*L. aberratio* from *aberro*, to go astray.)—Wandering from the right way. Sometimes bees will swarm without making the usual preparations by commencing queen-cells, by trying to raise a queen from a drone-producing egg; or a queen will refuse to accompany a swarm. Such cases being out of the usual course are assigned to aberration of instinct.

Abnormal bees. (*L. ab*, away from, and *norma*, a rule.)—Irregular, deformed, sometimes containing the characteristics of the two sexes in one individual; hermaphrodite.

Abnormal swarms.—Such as leave the hive under unusual conditions or contrary to known laws.

Aborted. *p.p.* (*L. aborior*, to miscarry.)—An organ whose development has been arrested at an early stage is said to be aborted or atrophied.

Absconding colony. (*L. abs* and *condo*, to hide, *i.e.*, to withdraw.)—A colony of bees which deserts its hive in a body.

Absconding swarm.—Part of a colony which swarms in a natural manner, and goes away to some distant place either before or after first settling in a cluster, or sometimes even after being hived.

Absorption. *n.* (*L. ab* and *sorbeo*, to suck in.)—The act or process of taking in or imbibing by the mouth or other parts, as in the case of the larvæ. The imbibition by the tissues of nutritive materials.

Acarus. *n.* (*Gr. acares*, a morsel.)—A genus of Arachnidæ belonging to the order Acarina, usually called mites.

Acarus favorum.—Found on old honeycombs, which are sometimes entirely eaten up by these mites, leaving a dust and their cast skins.

Accepted. *p.p.* or *a.* (*L. accepto*, to take or receive.)—Sometimes applied to the favourable reception of a strange queen by the bees of a queenless hive;—kindly received.

Acclimatise—Acclimate. (*Gr. clima*, a zone, clime.)—To inure, or to habituate to a climate different from the native one (or not indigenous).

Accommodation cells.—Irregular-shaped cells of variable size placed between worker and drone cells. *Transition cells.*—In building comb bees pass from worker to drone cells by constructing from one to six rows of such cells, and these sometimes have from three to seven sides. In joining two pieces of comb together bees build accommodation cells to fill up the interstices.

Accouplement. *n.* (*Fr. couple*, to couple.)—A coupling, or connecting, or pairing between drone and queen.

Acherontia atropos.—Latin name for death's head moth, a lepidopterous insect of the family Sphingidæ, an enemy of bees, doing much damage in southern Europe, where it enters and plunders bee-hives with perfect impunity.

Acid. (*L. acidus*, sharp, sour, literally piercing; *Gr. akis, akidos*, a sharp point.)—Sour to the taste. Honey after fermentation turns acid, and may be made into vinegar. Honey also contains a minute quantity of *formic* acid, but not in sufficient quantity to make it perceptible to the taste. This acts as a preservative.

Acoeton. *n.* (Butler gives its derivation as *Gr. a*, not, and *koitos*, a bed, hence without lees or dregs 'which form the bed or ground whereon wine and such liquors lie;' virgin honey, so called because 'it runneth of itself as new wine and oil.')—Name given by ancient writers to virgin honey—the very first that is taken from new comb. 'This acoeton or finest nectar, for his incorrupted puriti, is called virgin-honni.'—C. BUTLER.

Acrid. *a.* (*Fr. acre; L. acer; Gr. ak-e*, a point.)—Pungent, bitter, sharp or biting to the taste.

Adapting board or Adaptor. (*L. ad*, and *apto*, to fit.)—A board placed on the top of a hive, with holes or slits in it to allow the bees to pass into the supers placed upon it.

Adaptor zinc.—Sheet of perforated zinc with holes just large enough to permit workers to pass through into supers placed there, but too small to allow the passage of the queen.

Adductor muscles. (*L. adduco*, to draw to.)—Those which draw one part of the body to another.

Adjustable entrance.—Entrance to a hive which can be enlarged or contracted by means of slides or blocks.

Adjustable floor-board.—Loose floor-board used in hives on legs, which can be raised or lowered at will.

Adulteration. *n.* (*L.* from *adulter*—*ad* and *alter*, other.)—To corrupt or make impure by an admixture of less value for the purpose of deception or getting a greater profit. Substitution of a cheaper article for the genuine one.

(To be continued.)

ASSOCIATIONS.

BRITISH BEE-KEEPERS' ASSOCIATION.

The first meeting of the newly-elected committee was held at 105 Jermyn Street on Wednesday, January 21. There were present the Hon. and Rev. H. Bligh, the Rev. Dr. Bartrum, the Rev. G. Raynor, the Rev. F. S. Sclater, Captain Campbell, J. M. Hooker, W. OB. Glennie, Treasurer, and the Secretary. A letter was read from Captain Bush regretting his inability to be present on account of illness.

Mr. T. W. Cowan was elected chairman, and the Hon. and Rev. H. Bligh vice-chairman, for the ensuing year.

The following sub-committees were also appointed, viz., 'Finance:' the Rev. Dr. Bartrum, Rev. R. Errington,

and Mr. H. Jonas. 'Educational:' Hon. and Rev. H. Bligh, Dr. Bartrum, the Rev. G. Raynor, and the Rev. E. Clay.

Exhibitions: Captain Bush, Rev. R. Errington, J. M. Hooker, H. Jonas, Rev. F. S. Sclater, Rev. J. L. Seager.

County Associations: Rev. F. S. Sclater, Captain Bush, Rev. G. Oddie, Rev. J. L. Seager, and Captain Campbell.

The chairman was elected an ex-officio member of each sub-committee.

It was resolved that committee meetings be held on the third Thursday in each month.

On the motion of the Rev. F. S. Sclater, it was resolved, 'That a sum of ten pounds be voted for prizes in classes (open to members of the British Bee-keepers' Association only), at the county shows of affiliated county associations—such prizes to be offered only in cases where county associations will give facilities free of charge for the staging and care of the exhibits, the same total not to exceed 2*l.* in each case.' The matter was referred to the Exhibitions Committee to make the necessary arrangements.

The Secretary reported that he had received a communication from the President in reference to the bills about to be presented to Parliament relating to the teaching of agricultural and kindred subjects in elementary schools. Her Ladyship considered that it was very desirable that the Association should endeavour to obtain every possible information which would tend to demonstrate the benefits which the nation derived from the industry of bee-keeping.

GLOUCESTERSHIRE BEE-KEEPERS' ASSOCIATION.

Notice to Local Districts.

The Hon. Sec. of the Gloucestershire Bee-keepers' Association desires to draw the local secretaries' attention to the following new rule, and will be glad to hear at once from those that wish to avail themselves of it:—

That all local secretaries who are not appointed by the district associations shall be appointed by the general committee for the districts where they may be deemed desirable, and that the general committee may fill up all vacancies in its own body which shall occur during the year.

Moved by Mr. Brown, seconded by the hon. sec., That members of the Association be recommended to form themselves into district associations, mutually arranging the boundary of their districts, should any difficulty arise as to the question of boundary, the matter shall be referred to the general committee, whose decision shall be in all cases final.

That district associations shall subscribe to the county Association one-fifth of the total amount of their annual subscriptions, and render an account of all their receipts and expenditure to the general committee.

That each district association shall hold an annual meeting early in January, when it shall appoint a local secretary and other officers it may deem desirable, but subject to the approval of the general committee.

That the Association shall aid the district associations as follows, and in any other manner within its power; viz., by lending its bee-tent on conditions fixed by the general committee, by providing sufficient annual reports, and by supplying receipt-books, and members cards.

WORCESTERSHIRE BEE-KEEPERS' ASSOCIATION.

The address of Mr. E. Davenport, Expert to the Worcestershire B.K.A. is 'Tontine Buildings, Stourport,' *not* Stockport.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

GLASGOW INTERNATIONAL EXHIBITION, 1888.

[1563.] Having had full charge of negotiating with Irish bee-keepers, in connexion with samples of Irish honey for above, allow me, on behalf of my brother and myself, to thank all those who kindly sent samples from Ireland. Our best thanks are due to the hon. secretary of the Irish Bee-keepers' Association, Henry Chenevix, Esq., who kindly supplied a list of the best known bee-keepers in the various counties. I put myself in communication with many of these, and am happy to state I have received samples from Ireland sufficient to prove that they are advanced in the science of bee-keeping, and are keeping pace with their English and Scotch friends. Of the various lots I purchased I would specially mention the samples received from Miss E. E. Rutherford, Ghan House, Carlingford, and Mr. George Turner, Revlin House, Donegal. Of the other samples I received, I have to state many of them arrived in a terrible state of havoc, which was due in many cases to careless packing. Altogether, the Irish produce will have a creditable appearance. Should any Irish bee-keepers have any specialities, which they would like included in the Irish collection they will kindly forward the same at once to the under-noted address.—John D. McNally, 30 *Millarbank Street, Springburn, Glasgow.*

SECTIONS.

[1564.] Much has been written in your columns as to the most suitable size and width for sections, and also as to the desirability of four bee-ways or two bee-ways; but as far as I have seen the question of the most suitable width for these openings has never been discussed. I would much like to get the opinion of some experts on the subject. My own opinion is strongly in favour of full bee space sections. Last year I tried, by accident rather than by design, half bee space and full bee space both two and four way, and came to the conclusion that the best were the two bee way with full bee space. The separators need only be plain strips of tin or wood. I found that the cutting out for the half bee space very much weakened the separators, and as a consequence they required more time and care expended on them in manipulation. Besides I thought—for on this point I am not certain—that with full bee space the sections were better finished. Unfortunately last year very few of my sections were really well filled, owing I suppose to the peculiar season. Though it was only last year that I took notice of the difference arising from the different bee spaces, yet I have had full space section in use for three years, and always liked them, but last year settled me in the belief that they were best. Another thing I would like to mention, viz., that no firm of dealers, so far as I know, state in their catalogue the width of this bee space in their sections. This must have caused much trouble to buyers who sometimes have to order in a hurry without seeing samples. I know it has to—George D. Clark.

QUEEN REARING.

How Some of Them do it in America.

[1565.] Noticing the query by Mr. Stevens and your reply thereto in the Feb. 9th No. of the *British Bee Journal* I am constrained to offer the following, chiefly because it is very different from the method laid down in the article referred to, and is withal so very simple, only expressing the hope that it may be new to some of the readers of the *British Bee Journal*, and may help Mr. Stevens or others in the rearing of their own queens.

Every *Yankee* is supposed to be *in a hurry*, and I believe we apiarists are no exception to the rule. From April 1st to October 1st finds every day filled full of work for the man with 100 or 150 colonies on his hands, in a good locality for honey production. But queens must be had to prevent in-breeding, to replace old or worn-out queens or inferior ones, or to remedy queenlessness. Here queens cannot be reared and fertilised much before June 1st, so if we need queens in spring we buy *tested* queens of those who have them for sale. This gives us new blood, and from these and two or three others of our best queens we must prepare to rear all queens needed for the summer's use. Of course, since they are the best queens we have, their stocks will be strong, but they can be stimulated by a little syrup-feeding, or by giving them extra sealed brood from other colonies. When the time comes put on the supers, but do not give them all the room they want, crowd them a little. With this management one of the three or four will be sure to swarm early, casting a fine swarm. Hive this and give them all they can do gathering honey—we are now after the queen-cells to be found in the old stock. At the end of six days they will be ripe, when we go over the hive and cut them all out except one, to provide this colony with a queen. Handle the cells thus obtained very carefully, for they contain *royalty*. These cells are then placed in the '*nursery*.' This is simply a brood-frame one and a half inches wide, divided into compartments thus:—

On one side of this frame is tacked wire-cloth over the whole side; on the other are slides for each row of boxes. The cells should then be carefully placed one in each compartment. It is not necessary to suspend them. This frame is then to be placed in the centre of a good colony in such a manner as not to interfere with the supers much. Examine this daily, and as soon as a queen hatches remove her through the slide door at the back to a queen-cage, and introduce her to any colony which from any cause needs a new queen.

As the colonies from which you have prepared to rear queens swarm one at a time, we are supplied with cells for our nursery frame until the close of the honey harvest. Last season I introduced some twenty queens from one mother, reared in the manner described above. With us *hurried Yankees* the loss of time to the colony until the new queen is fertilised is more than compensated for by having to make no nuclei. Then, again, the loss in brood to the colony, to which the virgin queen is introduced, is not felt (with us) until after the honey season is over, and the young queen will provide a good strong colony for winter, which is all we desire.

But how do we obtain the few queens needed in the autumn? Why we just return some natural swarm having a good queen, and if her wing is not clipped we first place perforated zinc over the entrance, and watch for her as the bees go in, and when we find her make a nucleus with two frames of bees and brood and the queen from the parent stock. Two or three of such nuclei will generally supply all queenlessness in the fall of one hundred colonies.

Of course, the method outlined above must be carried out on a smaller scale in a small apiary; but I have practised it with as low as sixteen colonies. We find it the simplest and the cheapest, both in time and money, as well as the best, for the queens are all reared by natural swarming, and we can pinch off the heads of small queens or those leaving no jelly in the cells.

By buying a few tested queens each spring an' breeding from them we avoid that in-breeding so much discussed in your excellent paper the *British Bee Journal*—J. H. Larrabee, *Larrabee's Pt., Vt., U.S.A.*

FIRST ATTEMPTS.

[1566.] I am much obliged for your comments in the *B. B. J.* of January 26th, 1888, on the sample of honey I sent you. When writing you with sample, I promised to send you later on an account of my first attempts at bee-keeping. Here it is, if you think it will serve any good purpose in your interesting *Journal*.

I had been reading your valuable *Journal* the whole of the winter preceding my beginning a start with bees in the spring of 1887, obtained Mr. Cowan's *Guide*, and Root's *A B C*. In April I bought from a bee-dealer two lots of condemned bees in a twin hive, described as strong, healthy, and breeding. On arrival, I had them examined by a friend of mine, a large bee-keeper in this neighbourhood, who gave me the consolation that one stock was too weak to pull through the spring, the other, he *thought*, would be all right; and so it turned out. I thought I would start with two stocks, so ordered a swarm which came late in June: and now my troubles began. I had never hived a swarm in my life, and only saw it done once, and then by an expert. I was quite alone the evening the bees arrived, and could not possibly turn them out of swarm-box before 9.15 p.m.—rather late. After unscrewing the cover, in my haste to get them out, I forgot to bump the box so as to get the bees into the bottom of the box before throwing them out. I turned the box over, and the bees being close to the unscrewed wire gauze, their own weight bent the same, and they rolled out 4¾ lbs. strong. I saw my mistake instantly, and though in anything but a confident mood, with hundreds of bees flying about me, gave the box a good thump to get out what remained, and stuck to my standing. I next helped them towards the entrance of the hive with nearest tool to hand—a stick—and then did a little painting with a feather and some carbolic to keep them within boundary-line of the sheet in front of the hive. It was now getting dusk, and to help them cluster quicker, I sprinkled them with a little water from a rose-water pot; when doing this the handle came off, and half a pot of water went over the bees. Oh! I thought, if this lot gets through all right, it certainly will not be due to any help I have rendered them. However, the dry ground and sheet soon absorbed the extra moisture, and in about twenty minutes they were all in.

At ten o'clock I lifted the hive on its stand and bade them good-night. Lost a good teacupful of bees—dead. Result of my evening's performance—bees on the brain; could not get a wink of sleep. A fine beginning this, I thought. But how about the queen? Had I drowned her Jubilee Majesty?—that's the rub! I put them on ten frames of full sheets of foundation. When I examined for the first time, which was in the course of five days (could not get near them before, they had been so badly handled that they fairly drove me off the first two attempts I made to examine them), I was very pleased to find proof of her majesty's presence. At the end of the season the swarm had drawn out twenty combs, and

gave me 17 lbs. surplus beautiful honey, such as sample sent you. By the time they had the super combs well out, the honey glut was over, and then it simply became hand-to-mouth work with them. I may say I did not take but one outside frame from brood-nest, which was without brood, leaving the rest for the stock to winter, and in September gave them 15lbs. of syrup in addition.

The condemned lot before referred to filled my fourteen-frame twin-hive with bees, and gave me but one frame of honey. This was through another blunder of mine. If I had limited the brood-nest, surplus honey, instead of a box full of bees, would have been the result. However, I packed this lot also in September, and fed rapidly. To-day, March 2nd, the bees are out in large numbers for a cleansing flight, and looking remarkably strong and healthy as far as a novice can judge. I intend to-morrow, if as fine as to-day, to give them a cake of candy for safety, though I do not think they are short.

'How many stings did you get in hiving your swarm so clumsily?' asks some one. '*Not one!*' 'Did you use gloves?' 'No.' 'Veil?' 'Yes.' Further, to encourage the timid—of whom I am one—I did all the manipulating throughout the season without a sting. Perhaps I should have said, both lots of bees are blacks—the swarm not of the sweetest temper by any means.—J. W. Paul, *Westbrook Villa, Neath, South Wales, March 2nd.*

'WITH THE AID OF *MODERN BEE-KEEPING*.'

[1567.] As your correspondent, 'A Voice from the Cottage,' I have taken the *B. B. J.* for twelve months, and have not seen anything of a *bonâ fide* cottager. Well, sir, I don't think we can expect much from them if it is the same all over the country as it is in this part—West Sussex. There are a great many cottage bee-keepers about here, but all on the old style. They winter one or two stocks and destroy the rest. I had the good luck to save six stocks from death last year. An old cottager, who is past work, asked me to take his honey for him; after a good deal of talk I got him to let me drive the bees out and have them for my trouble. He was very doubtful about it; he has kept bees all his life and had never seen such a thing done. However, with the aid of the *B. B. J.* and *Modern Bee-keeping*, I drove them very well and pleased him much. He says the honey is the best he ever had. But to myself. I am a cottager, groom to a farmer two years this summer. I bought a late swarm of bees and a straw skep; gave 7*s.* for the lot, and was told that it was bad luck to give less than 10*s.* I did not know anything about bees. I had a mile to carry them. I got them home all right, placed them on the stand, and left them all that summer. The next spring I got *Modern Bee-keeping*: in that little book I found out all about bees. I made a super to fit the top of my hive with eighteen sections, crown-board, and roof. At the beginning of June I placed it on and had a glass to look in. In three days they were up and at work. I had quite a show for a while. people kept coming to see the bees work; and by changing the sections I took thirty-one pounds of nice white clover honey. I had no trouble to sell it at 10*d.* per pound.

I had never seen a frame-hive, and I could not afford to buy one, so, with the aid of *Modern Bee-keeping*, I made a very good cottage hive to take eight frames; I only put six in, and when I put my driven bees in I tied some unfinished sections in the frames; but I put the frames too wide apart, and the bees have built up between them. I put two lots into that hive, as I had no time to drive any more then. The next week I bought a straw skep and put the other four lots into it. Then I wanted a feeder: I got an empty syrup tin, made some holes in the bottom, tied a piece of coarse paper over them, placed it on the frames, and another over the hole of the straw skep. I only had to pour in the syrup and put the lid on, and it has answered well. I could put on two pounds at a time, and so far my bees have done well. I have three stocks to work this summer, and as there is a lot of white clover sown about here, I think I shall get a nice lot of honey. I have made a good frame-hive this winter; it has ten frames, one dummy, quilts, two section-crates, moveable floor-board, and porch. Next month I shall drive one of my straw hives, cut the combs out, and tie them into the frames with tape. I have got a good smoker, and can manage them pretty well now.—E. Raven, *Norton, Selsey.*

WHAT IS A COTTAGER?

[1568.] Now when many people want everything at least possible expense it is absolutely necessary to pass a rule defining the cottager. With keen trade competition, appliances, &c. are within the reach of all. The principal point, therefore, I consider, is time to give the bees the necessary attention when required. Take, for example, an agricultural village: the schoolmaster, the shoemaker, carpenter, and blacksmith, are in a certain sense their own masters, are always at home; yet these enter as cottagers. What wonder if the labourer complains that he stands no chance at the local shows? I believe there is nothing like fair competition for keeping up an amount of interest necessary for success in bee-keeping, but the man who is always at home has an advantage over his neighbour who is away the whole day.—North Devon Rustic.

NOTES FROM MALTA.

[1569.] I have at last hit on a satisfactory method of driving the bees from the native pots, but not until I almost lost two stocks. The combs are built sometimes across, but more generally very nearly fore and aft; and my plan was this, I gave them a puff of smoke at each end, and followed up by sprinkling from both ends with thin warm syrup. After some minutes I stood the pot, big end up, in a broken chair, and put my smoker underneath with its mouth just inside the small end or muzzle of the pot, so that the smoke went curling up slowly through the combs. A skep being held above as in 'open driving,' the bees ran up beautifully, and in a very short time I had the pot clean, and then hived them. I have never had to do with bees before, but can't help fancying that these are smaller than usual, because after hiving I stood the pot above the hive as a super, in order that they might hatch out the large quantity of brood there was, inserting excluder zinc between; but, lo and behold! when some days after I opened up to examine, the hive was deserted, and the pot full. Queen and all having gone up, and the performance had to be gone through again, and this time I cut out and transferred three combs. They have drawn out almost all the foundation, and her majesty appears to approve as she is not content with a patch in the centre, but has literally filled the frames from top to bottom. I never saw such sheets of brood, and as level as a board, and the young bees somehow seem bigger. May it not be that foundation causes them to build larger cells than they naturally do?

I find great difference in their temper—one hive I can hardly go near unless fully gloved and veiled, while another got from the same apiary are like lambs, and I find that smoke enrages them to an extent that I have almost given up using it. The scirocco wind makes them heavy and dull. Drones are already flying, and white capping is visible over honey here and there. Clover being now in blossom.

I have just ordered a hive on Heddon's plan, as I find

trouble with the eight-inch sheets of foundation; they warp so, and when really hot weather comes I think his shallow boxes will act better, but I doubt his system of contracting and wholly trusting to artificial feeding in winter, especially for an amateur who cannot always be among his hives.

I have discovered a carpenter who has frame-hives, about twenty, and gets his things from Turin. He was astonished at my whole sheets of wax, as he had only used starters, and I don't fancy has any section super arrangements.—MALTA.

DRONES AND THE FERTILISATION OF QUEENS.

[1570.] Last year I had a stock of Carniolans headed by an unfertilised queen. This queen was reared late in the autumn, and the weather turned out very cold so the drones refused to come out.

About the end of March I examined my hives and found this hive with plenty of drone-brood, but no worker brood. As I wanted to get purely mated Carniolan queens, I thought it would be a good chance to have them mated with these drones before other drones appeared, so raised queen-cells at once, and by the end of April they were placed in nuclei to be mated.

There are no bees within two miles of my apiary, and I attend to those, and I did not see a single drone. The queen did not begin to lay until the end of May, but she must have been mated with these drones. I intended to give it a further trial this spring, but the queen that I reared late last autumn got lost, as I cannot find her in the hive. I should like to have the experience of others.—H. P. JONES.

WELSH BEES AND FOUL BROOD.

[1571.] Having acted as an expert for the Montgomeryshire Association, and having been all over Merionethshire, and parts of Denbighshire and Cardiganshire, and having manipulated several hundred stocks of bees, I have not seen the slightest trace of foul brood, except in one case, and that I am glad to say was not a bar-frame hive, but a skep; nor were there bees kept in bar-frame hives within eight miles. This goes far to prove that the bar-frame hives are not the cause of foul brood.

Having noticed the great difference in colour of our native bees I do not wonder as to there being a dispute as to whether to call them black or brown bees. I have noticed that there are two distinct kinds in Wales, one black and the other brown.

The *black* bees (or the darker-coloured) are more fierce; their queens are not so prolific, but the workers are better honey-gatherers, and are fearful robbers, nearly as bad as Italians which attacked one of my stocks, and actually met the workers on the alighting-board and made them deliver their honey, and if they refused, they killed them.

The *brown* (or the lighter-coloured) are very amiable, their queens are very prolific and beautifully marked, very much like Carniolans, and their workers have light bands around them, but are much smaller than Carniolans, their only fault is they do not defend their hives well. I think that one of these queens mated with Carniolan drones would make a good useful bee.—H. P. JONES.

PAINTING HIVES—WIRED FOUNDATION.

[1572.] I doubt whether Mr. H. Adcock may think my practice any better than '*painting*' the inside of hives. However scorned, years' experience proves that it answers. It is to give two dressings of *boiled* linseed oil. The first dressing will sink into *pine* wood and entirely disappear in a few hours. The second will dry in a day or two, and make the hive impervious to wet or damp, and is much to be preferred to any kind of paint, the base of most of which is either white lead or white zinc, and this, I think, is injurious to bees. Probably this may *partly* account for so many of Mr. A.'s bees dying, but more was owing to the hive being set perfectly level. No matter what the kind of hive, whether on the rectangular or parallel system, to carry off the water, it should be inclined a little to the front, but only *very slightly*. But if Mr. A. wishes for a hive in which it is *impossible* for wet to gather, let him try a *modification* of Mr. Blow's Anglo-Cyprian. I made myself one a few years ago by way of experiment, but instead of placing the flight-hole at the *end* of the hive, and entirely closing the lower angle, I made the flight-hole at that angle, and along the whole length of the bottom of the hive with corresponding slides, and an alighting board nailed to the legs on the front side twelve inches broad, coming down nearly to the ground. Although it might be objected to in another respect, it certainly has the merit of being always thoroughly dry, and the bees have done very well in it.

A good deal has been written and done about wired foundation. I entirely object to it, except in the case of sending a hive and stock (especially a recent swarm) to a distance by rail. If you want, as is not unfrequently the case, to cut a comb out of a frame, it is most inconvenient to have cut through five or six wires at top and bottom. The same object, viz., keeping the foundation sheet straight can be much easier effected as follows:—Bore two small holes a quarter of an inch apart in both ends of the frame exactly equidistant from the middle of the end, and about an inch above the lower edge of the foundation sheets. Then with a needle draw a piece of strong cotton or linen thread through the holes from end to end of the frame, but taking care to cross the thread as soon as it is through the wood end, so as to clasp the foundation close by; return the thread to the end you began at, and tie tightly. This will keep the foundation quite straight and in the centre. The bees will draw it out, and when they come to the thread will gnaw it in two, and drag it out of the hive, or the bee-keeper may do that for them. Under this method I have never known the foundation to buckle or twist. The dark line represents

the foundation, and the dotted lines the thread crossed at each end; the whole a section of foundation, thread, and frame ends.—J. H., *York*.

DROUGHT NOT THE ONLY CAUSE OF A LIGHT HONEY-CROP.

[1573.] It appears to be a very general complaint from almost every quarter that the honey-crop of 1887 has been unusually light, and the cause is almost unanimously attributed to drought, but I apprehend that the dry weather was not the only cause, nor do I think it was the principal cause of the failure of the honey-crop. If such were the case, how could it happen that the best flow of honey that we had last summer came during a few days right in the very driest time in the whole season? while just before and immediately after there appeared to be very little or no nectar in the flowers. That is the way it worked in this locality as near as I could discover, and I watched things pretty carefully, or at least I tried to. I think it was the late Moses Quimby that said that the best time for bees to store honey is

when the farmers begin to complain of the need of rain, or words to that effect, and my experience coincides with that sentiment. Now, in this immediate vicinity it was not so extremely dry during the past summer as to effect the field-crops very badly, although more rain would, no doubt, have been beneficial to them, yet the honey-crop was no better here in June and July than in many other places. And the same condition of things appears to have existed in other localities also. In the *American Bee Journal*, page 613, W. J. Cullinan, of Mt. Sterling, Ill., makes the following statement:—'We have had this year, without exception, the largest wheat and oat crop that was ever known in this section of the country, and I see the same recorded for Missouri and other States. We had a fair crop of hay, and will have more corn than we had last year. We have double the yield of clover seed than was ever known before. It is true the honey-crop has been a partial failure.' I desire to call special attention to Mr. Cullinan's statement wherein he says, '*We have double the yield of clover seed than ever was known before.*' Now, the complaint is almost universal from Illinois, Iowa, Wisconsin, and many other places, that the yield of honey from white clover was very light indeed, notwithstanding the fact that clover bloomed profusely and yielded seed abundantly, at least in some places where the honey-crop failed. From the foregoing, I draw the conclusion that it was not altogether the lack of rain that cut the honey-crop short the past season. A pertinent and interesting query very naturally arises at this point: What then is the reason the flowers did not supply their usual quantity of nectar? If I were called upon to answer this question I should freely admit that I do not know. But judging from appearances, I have formed the opinion that the failure did not result altogether from the want of rain, but was also equally due to some peculiar state of the atmosphere, which I do not fully understand, and therefore cannot explain satisfactorily even to myself. I am not a scientist. The secretion of nectar in the flowers is a very delicate process, achieved only by the spontaneous action of natural laws which are dependent upon suitable atmospheric conditions for the fulfilment of their functions; and are very sensitive to any interruption of, or changes in, those conditions. Even the changing of the wind from one point of the compass to another will sometimes appear to suspend the operation altogether for the time. We can understand the effect, although we may not be able to comprehend the why and wherefore concerning it.

Every one that has had much experience with maple sugar is, doubtless, familiar with the fact that the flow of sap from the trees is governed almost wholly by the state of the atmosphere. When the conditions of the atmosphere are just right there will be an abundant flow of sap; when they are not right no sap can be obtained, although there may be no visible difference in outward appearances. Is it not reasonable to suppose that the flow of nectar in flowers is equally as much affected by atmospheric conditions as is the flow of sap in the sugar maples?

With your permission, friendly editor, I should like to see this matter mentioned through your columns. Perhaps, some of our scientific people will be kind enough to enlighten us upon this interesting subject.—JOSHUA PULL, *Seymour, Wis.*—(*From the American Bee-keepers' Magazine.*)

A PLEA FOR LARGE FRAMES.

[1574.] It seems to me that the most important feature of bee-culture is either ignored or carelessly overlooked, in the bee-lore of our best modern apicultural writers. It is a fact that none will dispute, that we measure our harvest by the strength of our colonies numerically; and to achieve the best results in this direction should be the guiding star of the apiarist, and the brood-chamber should be constructed in accordance with the natural laws governing the household economy of the honey-bee.

Let us take a peep at the bee in its natural habitation, where they become their own architects in the construction of their own combs, and what do we find? I have transferred hundreds of colonies, in all kinds of hives, nail kegs, log hives, box hives, and from bee-trees in the woods, and the same principle that governs one governs all, in the main, and that is large, deep, roomy combs, with stores above, brood beneath, and combs spaced from one and a half to two inches from centre to centre. In the early part of the season sealed brood can be found in the centre of the combs, next to which can be found larvæ in all stages, and on the outside of all, eggs, showing conclusively that the queen first commenced her laying near the centre of the comb, and, like a spider spinning her web, she plies her vocation from centre to circumference—Nature's most economical method of time-saving to the queen in her vocation of reproduction.

We should imitate Nature in the construction of our hives, especially in that of the brood-chamber, that we may bring about the greatest strength possible, numerically from the prolificness of the queens. To accomplish this, I contend that the most essential point in apiculture is, our combs should be so arranged that not one second of time need be lost by the queen in her onward march from cell to cell, depositing in the height of her fecundity about two eggs per minute, or nearly 3000 eggs in twenty-four hours. In order to do this, she should not be confronted with horizontal bars and bee-spaces in the centre of her brood-nest, as they are certainly a great barrier against her fecundity, being contrary to the laws of her natural domain. Being thrown out of her natural circuitous orbit, she loses time in passing over bars and bee-spaces, and shifting from side to side, thus losing the benefits of the queen's functions, which means a serious detriment to the strength of the colony.

Mr. Heddon has the lasting gratitude of the apicultural world for his many discoveries and substantial inventions, and we certainly have no desire to rob him of his justly earned fame; but we do take issue against a shallow, sectional brood-chamber, for reasons heretofore mentioned, and sincerely believe that had he exercised his ingenuity and inventive powers on a hive with combs of larger dimensions, he would have come nearer 'the hive' that will *come to stay*, and would have opened a new era, far in advance of that realised by his present device.

My argument is not altogether from the reasoning of Mr. H.'s departure from the theory governing their household economy, but years of practical experience with small and large hives has confirmed my statements in every particular, as regards the superiority of large combs over small ones, for obtaining strong colonies.

Let those who doubt my statement try an equal number of colonies with queens of equal fertility, and report. It is said that 'the proof of the pudding is in the eating thereof,' and if Messrs. Heddon, Hutchinson, and others, can give reports of larger yields of honey from the sectional brood-chamber than can be given from hives of large, roomy combs, I will have to acknowledge the fallacy of this article. I wish to get at facts, and if 'the new must give way to the old,' and the time is near at hand when 'we will manipulate hives more and frames less,' we wish to know by actual test the reasons, whys and wherefores.—J. M. HAMBAUGH, *Spring, Ills.*—(*From American Bee Journal.*)

NOTES ON BEE-HIVES.

FERTILE QUEEN INTRODUCTION.

[1575.] The art of queen introduction may be explained by considering the subject under two heads, or cases—(*a*) A stock of bees queenless; (*b*) A queen subjectless.

A stock of bees may become queenless naturally or accidentally, or may be made so artificially; among the former cases a queen leaves the hive and is then subject to the dangers of being destroyed by birds, insects, or reptiles; or it may miss its way, or may not be hived, &c. It may die of old age or disease, or may become a prey to some parasite. The weather, the time of year, or a lack of drones, may be against the successful union of the sexes, and so make the queen useless and worthless—merging into so-called fertile workers.

Amongst the reasons for artificially deposing the queen may be mentioned the desire for a queen of greater prolificness, bees of greater amiability or other qualities, or of a different race.

When bees discover that they are queenless (either artificially or naturally so made) they at once set upon the work of raising a queen from any worker larvæ in the hive not more than three days old, if virgin queens are not being raised. If they are rendered queenless while eggs or larvæ less than three days old are in the hive, and they begin to raise queens or build queen-cells upon those, it is difficult to queen them, but still this is not impossible. The queen-cells should be allowed to develop until a day or two before the queens are likely to hatch, and should then all be cut out—*i.e.*, the queen-cells—and the place brushed over with carbolic acid solution, except one cell, upon which the alien queen might be caged after the larva, or nymph, has been destroyed. The queen may be liberated at dusk the next day. This deceives the bees, so far as we are able, and causes them to believe their own endeavours have been successful.

There are objections to cages of all kinds—*e.g.*, the queen is confined, and so valuable time for egg-laying is lost; but this must be sacrificed for safety by this plan of introduction. There is an alternative method for those who object to cages, but which, from very careful experiments, I cannot do otherwise than condemn; in fact, I have not had a single success by it, nor have I known one by any of my friends who are keen and careful observers. It has been denominated 'Pond's,' sometimes 'Simmins',' method; the latter claiming to have added extra to the procedure. The method I allude to is as follows:—'Upon receipt of queen, go to the hive and remove that one to be superseded (or otherwise). At night take the new queen *quite alone!* after keeping her so for not less than thirty minutes previously, but quite warm, and, moreover, without food meanwhile; smoke the bees as usual, and then permit the queen to run down. Close the hive and make no examination until after forty-eight hours. Leave the operation until so late that a lamp is necessary. In early spring let the queen run down exactly where the cluster is situated. The queen should on no account be inserted in a colony from which bees have been taken to form a nucleus until three clear days have elapsed.

'N.B.—A "safety" match-box will do to keep the queen in alone, but the same must not be used twice over. For our own use we have tubular perforated metal cages, half-inch diameter and about one and a half inches long, one end permanently closed and the open end pressed into foundation after inserting the queen. These cages are then placed in the vest pocket, and can be carried round to the hives. Remove the wax end at the appointed time, and allow the queen to run down between the frames. The bees are not to have access to the queen until she is free from such receptacle, which must on no account be left in the hive. Thoroughly cleanse such cages by scalding before using them a second time.'

Last year I experimented with a large number of queens on 'Simmins'' (?) system, and in no instance did I find the queen missing on the third day, though fully half were on the tenth day; the others I found dead, or on the outside of the cluster quite alone, &c.; therefore the system seems a very valuable one for queen-dealers, as they can guarantee safe introduction, telling their customers to look on the third day to be sure, and yet prepare to send them another on the fourteenth, by which time she will be lost in some unaccountable manner.

Often these queens so introduced will drop a few eggs, and through some peculiar instinct of the bees these eggs are often, if not always, selected to rear the fresh queens from. By the way I might mention an experiment I have several times tried which proves that bees have the power to carry those eggs*—A Ligurian queen was caged upon a comb in a stock of black bees, after a few days the queen was removed out of the hive, queen-cells were started and yellow queens hatched; therefore, if the apiarist is busy, and does not happen to frequently examine the hive, taking things for granted, he will have a hybridised daughter reigning, and think she is the one he introduced, if he had not marked her. I might also say I have several times, upon the ninth day, found the poor queen upon an outside comb in a starving condition quite alone. Upon microscopic examination, in a few cases, a very poor condition of the ovaries, &c., has presented itself, through neglect of the subjects, although in other cases neither neglect nor disease could be traced. Moreover, I have for some years, upon quite a number of occasions, tried the 'Hallamshire law,'† and having tried this at various periods of the year, I can truly say, provided the instructions are faithfully carried out, a 'fertile' queen presented, &c., I have never found this method fail, and I have staked some expensive and pet queens on it. I do not, however, like the idea of withdrawing all the new-laid eggs and unsealed brood, which is so very necessary, but 'the shortest way across is the longest way round.' Nevertheless, the Hallamshire law is based on natural lines, while the other cannot be reconciled at all, except that we might consider the alien undergoes such a state of subjection by fright and hunger that she is glad to get 'board and lodging,' but this we can plainly see drives her into such a gone-back egg-laying condition, that she is, sooner or later, rendered quite unfitted for her motherly duties.

I have been very successful by a method that can be used at any time of the year. I allude to the method of shaking the bees off their combs in order to get them into the condition of a swarm. This exposes brood to the atmosphere unless performed in a manipulating house, but of course eggs and unsealed brood could, perhaps, be fixed in some other hive in the apiary in the case of this method, as also in that of the Hallamshire law. This excellent method I will describe as follows:—

Near the close of the day, when there is no danger of robber bees, subdue the colony with smoke, find the old queen, and remove her. Have a large platform, sheets of paper, or blanket in front of the hive. Remove every

* First select a stock of old black native bees, end of April, remove all their brood combs and queen, be sure you get every egg and grub out. Now cage a fertile and laying queen of a yellow race on some food, say in a pipe-cover cage, keep her caged for, say, twelve days, by this time you will find sealed queen-cells in the hive; you can take the queen away and let the cells develop, and you will find them hatch out queens of the same race you put in the cage.

The experiment will prove conclusively that bees have the power to carry eggs.

† The law referred to:—'If a hive of bees have no queen, or means of rearing one (that is, have neither queen, eggs, unsealed brood, nor queen-cells, in their hive), they will invariably accept a fertile queen at the entrance or dropped in from the top, providing they have been deprived of such means of requeening themselves forty-eight hours.'

No matter how long they have been queenless, or how old the bees may be, or what time of the year it is, nor even if fertile workers be present, unless they have begun to lay eggs, no failure will ever result. So that there is no exception whatever to the law; nor must the queens ever be caged; the application of it can be varied scores of ways.

comb out of the hive with the bees adhering. As the last frame is taken out, shake the bees from it on to the platform near the entrance, and replace the frame. Now take the second frame and shake the bees from it some distance from the entrance on the previously prepared platform; when the bees are all off put the comb in its place in the hive; and treat the third and fourth and all the rest of the frames in a similar way, shaking the bees about three feet from the entrance. This shaking from the combs completely subdues and mixes up the bees, and causes them to exhale the peculiar scent that bees do when shaken from a limb of a tree, &c., in swarming time in front of a hive. When all the frames have been shaken and replaced in the hive, drop the new queen at least two feet from the entrance, and she will at once move on with the marching legions toward the entrance, and in thus mingling with the mass she at once becomes impregnated with the peculiar odour of the colony, and becomes one of them; and by her queenly sound and motions among the bees she is at once recognised as the mother-bee, and enters the hive joyously with the rest, and at once proceeds to her work of egg-laying. A few whiffs of smoke among the moving mass will cause a more hasty entrance, and also add its scent to that of the bees. By doing this late in the afternoon, or evening, everything is quiet and in working order in the morning, and there will be no trouble from other bees.

With regard to the 'Hallamshire' law and the reason why bees prefer eggs or larvæ to raise their own queens rather than accept a strange or alien queen, I have often thought that the force of habit is too often either not recognised or overlooked in dealing with bees. All my experiments in faithfully trying Simmins' proposed method of queen-introduction have resulted in the desired queen being 'put out of the way' when means of raising a successor were present in the hive, for the bees have invariably raised a queen after their own sweet will. I have carefully marked a few of those queens, and have watched the proceedings of the bees most attentively; in fact, I believe Burnens could not have been more attentive than those who so kindly have assisted me when I could not be actually present myself when trying experiments requiring prolonged watching and attention, and the final has each time been the same when eggs or larvæ have been in the hive at the time of introduction. As I have already stated, immediately the cluster is broken to withdraw the queen to substitute an alien the colony is disorganised. I might say I have never placed another queen on the identical spot, the original queen was parading at the same moment of removing it. There is no doubt about the bees sometimes suffering the queen to remain within the hive, apparently uninjured, for a period of time when ushered in upon the Simmins' (or Pond's) system. This period I have not found to exceed nine or ten days; the poor insect gradually moving from comb to comb to the outside of the cluster, there to perish and be carried out of the hive, though sometimes it is highly probable it may leave the hive alive through mere lack of homage. I have observed the bees carrying the deceased queen out, and I have seen the queen take refuge from one hive to another.

It may be interesting to you for me to relate that I have on three occasions found alien queens so acting in this latter manner, and that in each case, although the queen entered another hive, a few bees seemed to accompany, but their courage or love seemed to falter as they clustered on the handle of a garden spade, on a post, and on a pea-stick on each occasion respectively. In each case the alien was balled or encased on the floor-board, and no doubt would soon have been despatched had I not rescued them. As they receive so little homage or attention they thus quickly present the appearance of non-laying queens and are nearly as capable of flight, as no partly or wholly digested food is offered them (the food bees feed the queen with being about the same as they feed to the brood).

But why is she superseded? It is no use saying dethroned, as she never had the honour of reigning. Of course I am now speaking about alien queens, and if she was in a stimulated condition eggs would be deposited or dropped, and while there is an egg in the hive (whether queen-cells are present or not) the bees will try to develop it into a queen, so that if the first started cells were on the old brood the new queen might destroy them as soon as they become nymphs. Then if she left the hive in disgust or because she got no homage, why, of course, a daughter of hers takes her place.

I have found by repeated experiments that so soon as a queen is taken out of a seam of bees operations are commenced to raise a mother-bee, and by even placing the queen on to another frame these operations will be commenced. Sometimes she will then be crushed to death. By means of the so-called dummies, as used in bar-frame hives, a number of queen-cells may be started and completed in the same time and hive, providing each comb or cluster is separated. I do not mean cork-packed or great thick dummies, but perforated zinc. The main point being to place the queen on to a different frame after a few eggs are laid in a few cells. But why is she so seldom destroyed on the new frame? Simply because the whole family is working in natural harmony or habit. It is the habit for the queen to move from frame to frame; but, mark well, it is not the habit of the queen to do so until the whole of her business is transacted upon that particular frame, hence the break appearing it is the habit of the bees to perform the operation of raising a new queen. During the summer so many of the brood-cells become clogged with stores, that the queen wanders from comb to comb, which causes the same thing to be done—hence the swarming fever. The queen gradually becomes of a non-laying appearance and quite capable of flight, owing to the want of the necessary amount of feeding and attention she should have to keep up her former state, and leaves the hive as an insect a little removed above the habit of a worker. If this is not so, for why do they do it? Moreover, no attention is paid to an alien, as it is not her, or the custom, fashion, or habit for queens to fly, nor to be carried, from one hive to another.

Now, suppose there are neither eggs, larvæ, nor queen-cells in the hive, how can the bees raise a queen? They cannot do it—twice I have had a stray queen take possession of such a hive, and in each case the queen has been of a different race to the bees. Place a frame containing a few eggs into the hive. Why do the bees recognise this gift? It is their habit to obtain all they can, which we all know perfectly well, and, as I have already stated, it is their habit to raise a successor from the egg. They therefore gladly commence operations upon this frame of eggs. The same conditions as above being present, that is, a disorganized state. Again, suppose the whole of their eggs and means of raising a new queen are withdrawn, or, more naturally, their queen dies. In a state of nature, perhaps, there is at no time of the year a hive without eggs in a normal state. But in the case of a stock that has swarmed, virgin queen after virgin queen might meet with mortal accidents, and so this hive would become queenless; even if a virgin queen should survive unfertilised, or be raised after all drones were dead, or if the weather happened unfavourable for fertilisation, all other conditions being favourable the hive would die out. But should a stray fertile queen fly to the hive, the habit is (we challenge any one to contradict this) that this queen is accepted. Hence the Hallamshire law is based on natural, rational, and correct lines.

I have no hesitation in saying, from my own experiments and experience, that if the law is truly and faith-

fully tried, it will invariably succeed, excepting those few persons who believe and state their own way is best, and who omit, or cannot discern, some of the particulars and conditions of the law.—T. Bonner-Chambers, F.L.S., *Tref Eglwys, Caersws, Montgomeryshire, March 22nd.*

[The above contains much that is opposed to the experience of some of our most practised apiarians, but as our correspondent has bestowed much pains on the preparation of the paper, we have given it insertion in our columns.—Ed.]

'Explanation required.' (See page 142, March 15th.)—I will give my idea of the required explanation. It is a very simple one, but perhaps not on that account less effective. Assuming the statement to be a fact, which I see no reason to doubt, I think the strange conduct of the bees was the result of the marvellous sensitiveness of their olfactory nerves. We know how they seek out and follow for miles the faintest odours from limes, clover, and other scents pleasing to them; and also how powerfully they are affected and seek to avoid what is unpleasant. The superstition alluded to by 'E. C. P.' is very ancient and very widely diffused. We may rest assured that in almost all cases of this kind there are some particles of truth at the bottom of them. I believe, then, that the exhalations from a dead body are most repugnant to bees living near. In this case the body had probably been lying in their vicinity some three or four days, and would have become almost unbearable to them. Being thus thoroughly aroused, it is by no means wonderful that they should seek by a flight in the fresh air to escape from what tormented them. Most likely this is not an isolated case, but that there have been numerous instances of the same kind, and thus has been laid the foundation of this old superstition. Now I think I hear 'E. C. P.' saying, 'But how do you account for the return to the hives when the lad tapped them?' Simply thus:—I don't believe their return depended in any way upon this tapping. When I was a boy (alas, how long ago!) all of our household used to sally forth at swarming time to 'ring the bees.' Nothing was said to be so effective as a copper warming-pan (out of date now) hammered with a key; and when the bees settled in a bush or hedge near, as they almost always did, the good people used to say, 'There is nothing like ringing the bees to make them settle!' But you know we have got beyond all that now; the copper warming-pan has gone, the key is hung on the wall, and still the bees settle as well as ever! So, I say, that tapping or no tapping, the bees in question would have returned to their hives after having shaken off, as far as possible, the unpleasant odour that assailed them. If this explanation is not a satisfactory one, it has at least this merit, that neither 'E. C. P.' nor any other person can say for certain that it is not the true one!—C. C. P., *Valentia, Co. Kerry, March 20th.*

Water for Bees.—I noticed our friend 'Useful Hints' advocates the old mode of giving water to bees in vessels with wooden floats. May I ask him to try the plan I adopt, and which I have previously mentioned in the *Journal*, viz., a good thick stratum of cork-dust on the water? It has many advantages over the old plan, which did not act unless the sides of the vessel were perpendicular, even then it was liable to disarrangement; for instance, the wind would blow the float to one side and there it would stick, whilst the bees drowned themselves by the score, whereas the cork-dust is simplicity itself in its application, and can be used on any kind of vessel or tub and answers to the very last drop of water, even after the water is done the bees sip at the moist dust for a long time.—F. Boyes.

Drones Flying.—I have seven stocks in frame hives, strong and in good condition. Four of the seven had drones flying to-day—one Carniolan, one Ligurian, and two Ligurian hybrids. For such a season is this not extraordinary, especially in a county like Northumberland? On March 10th—a very warm day here—I first noticed them in the Carniolans. Until to-day the bees have not been flying since.—Morpeth, *March 26th.*

Echoes from the Hives.

The Hill, Corbridge, March 31.—This month has been the coldest of the year. Snow and hard frost nearly every day. I expect a good many hives will lose their number when they come to be overhauled. I have not been able to look at mine yet.—R. L. Richardson.

Beverley, April 1.—A fine day at last; bright sunshine but cold wind, thermometer 48° at noon; very cold whenever the sun is crossed by a cloud. Went into winter quarters with sixty-eight stocks, all told, and to-day, I see all are alive, and, judging by the activity of the bees both in fetching water and pollen (pea-flour chiefly), none are queenless. Vegetation remarkably backward here.—F. Boyes.

North Leicestershire, April 2.—Bees are still pretty closely confined to their hives by the snow and blow. In reality they have had only three or four days' work on the aconites, snowdrops, and crocuses. Pea-flour has been freely taken, when the weather permitted the bees to fly. The buds of currant and gooseberry are still unexpanded, and there will be little forage to be gathered yet for a fortnight. Snow sixty-three days old still on the ground.—E. B.

Burr-Oak Apiary, Angelica, N. Y., U. S., March 23.—Bees appear to be wintering well upon this side of the 'great pond.' Last fall, as an experiment, I left about a dozen of my old stocks upon their summer stands—without any winter protection whatever, and during *mid-winter*, upon a warm sunny day, those colonies were moved to a new location, some seven or eight rods away. I expected to find twelve middling weak stocks in the spring. But I am happy to say that upon examination this morning I found them all in a 'prosperous and contented' condition.—W. M. Barnum.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

Novice.—1. *Transferring.*—Three weeks after swarming when there is less danger of injuring the stock, there then being little or no brood in the combs. 2. *Excluder zinc.*—We never use excluder zinc under a section rack. 3. *Artificial Swarm.*—The method proposed would be bad. When the hive is ready to swarm remove three frames of brood and bees without the queen, place these in a hive with two sheets of foundation; shift the old stock to a fresh stand and place new hive in the position thus vacated. By introducing a new queen to the new hive much time is gained, and as a consequence, honey gained.

J. G. Snook.—1. *Dead Stocks.*—You give us no particulars as to condition of stocks when found dead. If you transferred one stock soon after it swarmed, no doubs there was not a queen, and in the transferring the queen-cells, containing the immature queen, got damaged. 2. *Transferring.*—As you have already transferred some stocks, you can do so as soon as warm weather sets in, say, May; with novices it is

advisable to wait until three weeks after swarming. See answer to 'A Novice.' Thanks for your kind remarks.

THOS. ADAMS.—*Bees and Blast Furnaces.*—Bees do not gather pollen from refuse of blast furnaces. No doubt they were drinking the moisture which would be sure to be held after rain by such material.

R. L. RICHARDSON.—We should consider it would be perfectly safe to use your frames of honey as they are.

K.M.S.A.—1. *Painting Hives.*—Get the requisite number of makeshift, or new, hives, and stand them in the place of the old hives you desire to repaint, transfer the combs from one hive to the other, take away the hives, clean and paint them, and in the course of a few days return them to their former position. This may be done at any convenient time. 2. *Stimulation.*—In frame-hives the amount of consumption may be noted by gently turning aside the quilt and seeing the quantity of sealed cells in the upper and hinder parts of the combs. Some of these cells in the immediate proximity to the cluster of bees may be uncapped with a sharp knife, or may be bruised, when the bees will at once make use of the contents, and the queen be stimulated to ovipositing. This should be done on mild days. Or you can give Good's candy, or frames of honey, or liquid food of proper consistency, but we prefer uncapping the cells. 3. *Best Extractor.*—We must on this point refer you to our advertisement columns.

E. O. B.—*Bees dying in the midst of Stores.*—In the absence of any bees or comb forwarded, we cannot say that the bees died from any disease. It is most probable that the bees, unwilling to leave the cluster in search of the honey in hive, died in consequence of there being no winter passages. The broken wing of the queen would not be the cause of her death.

J. S. W.—Barbadoes sugar, equally with Porto Rico, will be found suitable for dry sugar feeding.

Received from the Speciality and Novelty Seed Company, Newton-le-Willows, Lancashire, their Catalogue of Seeds. This catalogue will be found of special interest to our numerous horticultural readers.

Received from Messrs. Neighbour and Sons their Catalogue of Hives and Apicultural Appliances. This is a very comprehensive catalogue, and with its numerous illustrations covers the whole ground of bee-keeping.

Received from Simmins' Bee Company, Limited, Rottingdean, Brighton, their Annual Circular (18 pages). This is a full catalogue of all the appliances required by bee-keepers of the present day, with some special information respecting queen-introduction.

Received from the British Stores, 6 Dionis Yard, Fenchurch Street, their catalogue of prices of hives and other appliances. This catalogue contains some practical and useful instructions as to successful bee-keeping by an old bee-keeper.

ERRATUM.—P. 171, col. 2, line 13 from bottom—*for* one of absolute phenol to four ounces of syrup, *read* four hundred of syrup.

Business Directory.

HIVES AND OTHER APPLIANCES.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
APPLETON, H. M., 256A Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BURTT, E. J., Stroud Road, Gloucester.
EDEY & SON, St. Neots.
HOWARD, J. H., Holme, Peterborough.
HUTCHINOS, A. F., St. Mary Cray, Kent.
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MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.
WALTON, E. C., 82 Emmanuel Street, Preston.
WEBSTER, W. B., Binfield, Berks.
WOODLEY, A. D., 26 Donnington Road, Reading.
WREN & SON, 139 High Street, Lowestoft.

HONEY MERCHANTS.

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FOREIGN BEES AND QUEENS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
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METAL ENDS.

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LYON, F., 94 Harleyford Road, London, S.E.
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NBEIGHOUR & SONS, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

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HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.

HONEY GLASS MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BLOW, T. B., Welwyn, Herts.
PEARSON, F., Stockton Heath, Warrington.

NOTICE.

THE *British Bee Journal* is published by KENT & Co., 23 Paternoster Row, and may be obtained of all local Booksellers, and of the following Agents:—

ABBOTT, BROS., Southall, London, and Dublin.
ANDREU, F. C., Port Mahon, Minorca.
APPLETON, H. M., 256a Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Stanley Road, Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
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McNALLY, R., Glenluce, N.B.
MEADHAM, M., Huntington, Hereford.
NEIGHBOUR & SON, 149 Regent Street, and 127 High Holborn, London.
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REDSHAW, C., Canal St., South Wigston, Leicester.
RICE, J. J., Wenaum Street, Norwich.
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WOODLEY, A. D., 26 Donnington Road, Reading.
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THE
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Editorial, Notices, &c.

PRACTICAL WORK IN THE APIARY.

MAKING WAX GUIDES AND FIXING FOUNDATION.

It may not be generally known that it is not absolutely necessary to have comb-foundation impressed with the bases of the cells in order to secure straight combs, although time is saved by using such foundation, and all advanced and practical bee-keepers now use whole sheets, much to their advantage. Many devices have been tried from time to time to induce bees to build their combs in the centre of the frames, and amongst others was the idea of using plain sheets of wax, or, we should say rather, strips of plain wax. Later these were made stronger by dipping sheets of paper or other material in wax and then cutting it into strips of about one half to two inches in width. The bees took to this scooped out the bases for the cells as far as the embedded material, and constructed the cells' walls in due course. This was a great improvement on the pieces of comb formerly used, but the wax-sheets invented in Germany, impressed with the bases of the cells, have displaced this simple method. In these days of cheap, and we may say almost perfect foundation, it would hardly be any use mentioning the former methods, except for the fact that a great many beginners, and others who are taking to bee-keeping, are obliged to economise and would be glad to know of any simple and effectual plan of securing straight combs.

A simple guide of plain wax-sheet is easily made and fixed by an old method recommended some years ago by Mr. Abbott in this *Journal*. For this purpose get a piece of soft wood for a 'guide-block,' 1 inch wide $\frac{3}{4}$ inch thick, and 14 inches long. Shave off the front bottom edge, as shown in Fig. 1, and cut a corner out of

Fig. 1.

each end so that the front part will be just long enough to go into the frame, and of a width to bring its face where the line of wax is wanted. For a standard frame it may be fully $\frac{3}{8}$ths of an inch from the projecting ends to the front face. Let it soak in cold water while the wax is melting. The wax is best melted in an ordinary glue-pot, or stand a preserve-jar containing the wax in a saucepan of water, which should be kept boiling. Take the frame in the left hand and introduce the 'guide-block,' with its wet face and grooved edge, on the under surface of the top bar. With a painter's brush apply the hot wax along both the wet guide and dry bar of the frame, giving one or more coats according to the thickness it may be desired to make the wax-guide. In a few seconds it will be cool enough to remove, when the frame can be turned over top bar uppermost, and the guide-block removed, pulling it away from the top first. We then have a plain wax-guide $\frac{1}{2}$ to $\frac{3}{4}$ of an inch wide. Success is insured by having the block well soaked, the frame bar perfectly dry, boiling wax, and a clean brush. This plan is also recommended in *Modern Bee-keeping*, and is much more simple and less messy than using plaster casts.

If ordinary foundation is to be used in strips of 1 to 2 in., it must be fixed in its proper place on the under side of the top-bar, and for this purpose we use a wider wooden guide-block. A board, A, Fig. 2, $\frac{3}{8}$ths of an inch

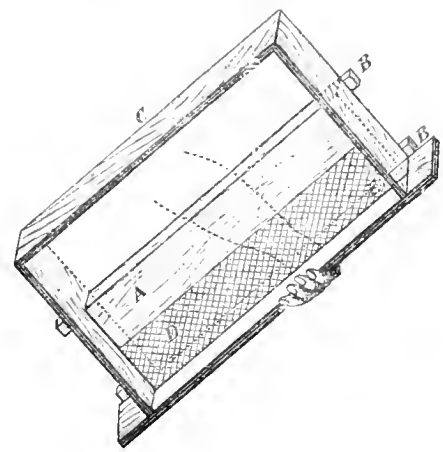

Fig. 2.

thick, is made to fit inside the frame C, and two strips, B B, are nailed along the back of it, and, as will be seen, project at both ends. The board is placed in the frame, C, the two firmly grasped in the left hand, and held slopingly as shown. The strip of foundation, D, is laid in its place, and molten wax poured at the point, E, where the foundation joins the top-bar. If the inclination is just right, and the wax at the proper temperature, it will run down the angle as down a gutter, and firmly fix the foundation to the bar. In Fig 3 we also have an old acquaintance, which those who have known the *British Bee Journal* long enough will recognise, and which is used for pouring out the molten wax in a fine

stream. It is simply a metal spoon with the sides folded over so as to form a funnel-shaped trough, from the pointed end of which the molten wax may be poured where wanted. It will cool in a few seconds when the

Fig. 3.

wax comes in contact with the cold wood of the top-bar, and then the frame can be turned over, placing the top-bar uppermost, removing the guide-board, and the frame can then be hung on one side until the wax becomes cold and solid. In fixing foundation in this manner, it is also absolutely necessary that the wax be quite hot and the bar perfectly dry.

Full-sized sheets of foundation may be fixed in the same way, but the board, A, Fig. 2, should nearly fill the frame. Some prefer to run a little wax along the junction on the other side also, but we have never done this, and found that the sheets are less liable to give way if only fixed on one side, to say nothing of the saving of wax. The bees seem to realise the fact that the foundation is only secured on one side, and at once set to work and attach it firmly. The cause of sheets of foundation giving way when this method of fixing is adopted is generally from not having the wax hot enough so that it sticks neither to the wood nor the foundation. It should be hot enough to melt the foundation where it comes in contact with it, then it will also be just right to adhere firmly to the wood. Wired foundation may be also fixed in the same way. Where a large number of sheets have to be fixed instead of the glue-pot and spoon we prefer to use what is known as Abbott's wax-smelter. This is a spouted boiler on the glue-pot principle in which the wax is kept at boiling water heat until it is poured out at the fine spout. Fig. 4 illustrates the one

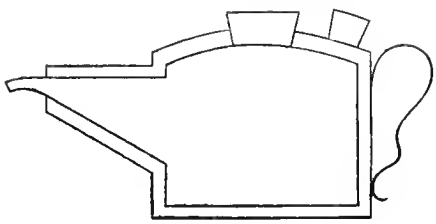

Fig. 4.

we use, it is made of copper, and with proper care will last a lifetime. The outer vessel is for water, and the inner one for wax. Thin wax-foundation may also be fixed in sections in the same manner, using a smaller guide-board.

THE IRISH EXHIBITION IN LONDON.

We are sure that all Englishmen will be pleased to hear that an exhibition of the products of Ireland will be exhibited in the ensuing summer at the Olympia, Kensington; and perhaps no exhibition of recent years is likely to prove more practically useful. Ireland possesses great natural resources and many important industries, and a full display of her products and manufactures will do much to assist the revival of trade in Ireland, and will prove of the greatest interest to the people of Great Britain. The Exhibition is begun under the happiest auspices, and its Executive Council and patrons contain the names of the most distinguished representative men. With the view of giving every facility to the Irish artisan of exhibiting the produce of his skill, the Council have determined to make no charge for space occupied, except in very special cases. Among the interesting features will be a representation of an Irish village, with the veritable peasants at work upon their cottage industries—the dyeing of yarn, making lace, knitting, &c. Under the section of Agriculture, honey will be represented; and we trust that Irish bee-keeping associations will use every energy to make this feature of the Exhibition a success. (See letter from Mr. J. M. Hooker, page 193.)

USEFUL HINTS.

'Athens, the eye of Greece, mother of arts
And eloquence, native to famous wits:
There flowery hill Hymettus, with the sound
Of bees' industrious murmur, oft invites
To studious musing.'—*Paradise Regained.*

Long as we may for 'flowery hills' and 'bees' industrious murmur,' the sole representatives of flora within reach of our bees are a few miserable-looking, weather-beaten crocuses; and from visiting these the poor bees are prevented by cold winds, sleet, and snow, and their 'murmur'—complaining, rather than industrious—is confined to the hives. So relentless are the weather gods.

We English are said never to be satisfied unless we have a grievance, and, certes, our chief and standing one is the weather. But is it a true and just one? and can we expect 'perfection' in climate in this world—even if we obtain it in bee-feeders and other appliances? Let the following extract from 'Cold Winds' (*Longman's Magazine*) answer these questions:—

'The *Bora*, an intensely cold, violent, boisterous wind, which visits the north-eastern shores of the Black Sea, at the foot of the Caucasian range, renders it too dangerous to move about on shore, as the risk of injury is so great from falling bodies, stones as large as one's fist, slates, &c., while the strongest buildings are shaken by the fearful force of the wind. The *Purga*, a north-westerly wind which visits the plains of Siberia and the district of the Lower Yenissei, in its fury takes up the frozen snow, and being too cold and dry to absorb the icy particles, the air becomes filled with a dense cloud of dust, and heaven and earth become one chaotic mass of finely-powdered ice, which fills the eyes, stops the breath, and insinuates itself through the smallest openings in the clothing. During the storm the thermometer falls to from 90° to 110° Fahr. below freezing-point, causing numerous deaths, and bringing untold miseries to the inhabitants of this frigid climate. The cold is so intense that were we to lay hold with our bare hands on a piece of iron of the same temperature, the flesh would be, to the sensation, *burnt* off as if the iron had been red-hot.

'In the north-western States of the American Continent we have an almost exact counterpart of the *Purga* of Siberia in the *Blizzard*. While a brilliant sun is shining over the snow-clad prairies, and a light southerly breeze gently wafted along renders the air most delightful and exhilarating, a few minutes suffice to alter the whole scene. A cloud is seen advancing from the north-west, and in a short time spreads with fearful rapidity. It is another *Purga* cloud of ice-dust, and its effects are the same. It is death to any one who ventures out-of-doors. Those who are unfortunately caught in it are either instantly suffocated or driven mad, and in the piercing blast tear off their own clothing—utter despair depriving them of their reason. In the blizzard of January last hundreds of human beings, and thousands of cattle, were lost. Marvellous changes of temperature occur with these furious hurricanes,—for instance, from 74 degrees above zero to 28 degrees below—a change of 112 degrees in 24 hours, took place in the blizzard referred to above.'

Cease, then, to complain, oh, fellow-countrymen, since the same authority tells us of the fortunate position of the British Isles tending to ameliorate the severity of the coldest winds. The warm ocean immediately sur-

rounding our shores insures us a milder climate, and it is a very rare circumstance to have a strong east wind blowing when the thermometer is many degrees below freezing-point; otherwise, we should experience a wind of the severity of some of those which visit the climates mentioned above. Truly, contentment is a great gain—a great blessing—and well may we exclaim,—

'England, with all thy faults, I love thee still.'

Over-hauling and thoroughly examining all colonies—a spring work of no little importance—has scarcely been practicable up to the present time, but should be done as soon as the weather will permit. For directions refer back to previous 'Hints.'

Taking the stereotyped period for bringing a colony up to 'boiling-over point'—*i.e.*, six weeks—as to population, if our hives are set in order about the middle of this month and measures taken, by stimulation, uniting, removing brood from strong to weaker colonies, spreading brood, &c., for equalising and increasing population, June, the month of white clover, honey-storing, and natural or artificial swarming, will be close upon us, so that we have no time to lose—*always* weather permitting. But the spring *must* be a late one, consequently the honey-flow will be late also; and yet we know enough of the weather to be aware that we cannot forecast the seasons. Therefore it behoves all bee-keepers to take time by the forelock, and to be ever ready for sudden changes. If a warm, growing, showery period succeed to the long, cold, sunless months which have confined the bees to their hives, they will, in well-managed apiaries, put forth all their energy, and swarming will soon begin. At the risk, therefore, of being premature, we may at once refer to swarming,—Nature's method of increase.

Natural Swarming.—That veteran bee-master, Langstroth, in a late communication to the *American Bee Journal*, remarks: 'It is easy to *assume* that every bee in an artificial swarm will work just as well as it would in a natural one. But who that has had a large experience with both methods can deny that for the production of comb honey, at least the natural swarm has that spur in the head which artificial processes never seem to give? Is it not reasonable, then, to think that for its highest prosperity every colony of bees should be in a normal, that is to say, in a natural condition?' The veteran is arguing in favour of allowing drones in all hives as being in accordance with nature, but his testimony to the superiority of natural over artificial swarms is so striking, and so strictly in agreement with our own experience, that we cannot resist making the quotation. Whether increase be desired or not when working for comb-honey, we always allow the bees to swarm whenever Nature prompts them to that course; and by placing the swarm on the stand of the parent hive, and giving to it more or less of the brood, as well as by removing the supers from parent to child, we gratify the swarming instinct, and procure far more energetic work than is possible from an artificial swarm. The depleted parent stock is placed beside the swarm, and is used as a nucleus for queen-rearing, or, increase being desired, is built up into a strong colony. For full details of this system see *B. B. J.*, vol. xv. p. 204.

Foul Brood.—Every bee-keeper during the spring examination of colonies should keep a strict look-out for the first symptoms of foul brood; and if the least suspicion exists—being well certified of the fact—let him make short work of any diseased stock by committing it to the flames—hives, bees, combs, and all—at the same time feeding all his remaining colonies on phenolated syrup, and using freely around the entrances, alighting-boards, and the entire outsides of the hives, carbolic acid solution or salicylic acid as a disinfectant. By adopting stringent measures on the first appearance of, instead of dallying with, the foul pest in the almost vain endeavour to cure, he will perform a duty to his neighbours and save himself expense and trouble in the end.

Feeding must also be carefully continued. The consumption of food in good colonies is now greater than ever.

Plant.—Let sections, crates, hives, foundation, and, indeed, all appliances likely to be required, be procured and kept in readiness against the busy time which we all hope is near at hand.

Hives and Surplus Chambers.—Our contemporary, the *Record*, for this month, has an excellent article entitled 'Landmarks for Bee-keepers,' in which the standard frame receives its due meed of praise for use in the brood-chamber, and a sort of quasi standard-frame $14 \times 5\frac{1}{2}$ in. which works admirably with the standard when tiered above or beneath it, is strongly recommended. The plan of using shallow frames, of from four to six inches in depth, over brood-chambers, for obtaining surplus honey—comb or extracted—we have practised for many years with great success, and can therefore give in our adherence to Mr. Carr's views. We would, however, make one addition, viz., that a zinc-excluding adapting-board be used between hive and surplus chamber. Of the precise form of such adaptor space forbids us now to treat, but in our next we hope to give some hints on its construction. These honey-boards are extensively used by our American cousins, and we venture to prophesy a revival on the same lines in our own country.

Olla Podrida.—*In-and-in breeding.*—There is now no necessity for us to recur to this subject, as we had intended to do, since our views are so fully expressed in the excellent article published in last issue under the same heading, every word of which we fully endorse.

Third-class Certificates.—In the correspondence lately carried on in our columns, respecting the examinations for these certificates, it was stated in a foot-note to a letter (1512, p. 120) signed 'Queen,' that in the 'Instructions' 'no specified time is laid down for driving the bees from skeps;' and although this is literally correct, nevertheless, we think in fairness to the judges who have endeavoured strictly to carry out the rules in regard to points, some further explanation is due. There can be no doubt that the construction put upon these rules by various judges has differed materially.

The time occupied in driving the bees and capturing the queen has by some been considered material, and by others more or less ignored. So difficult is it to act justly upon a hard-and-fast rule! So true is it that *summum jus sæpe summa injuria est!* Take the case of a candidate who takes thirty-five minutes to drive out all the bees and misses the queen, although she is present. He loses twenty-five points (one for each minute over ten), and forty points for not capturing the queen as she ascends. He has lost, therefore, sixty-five points out of his hundred, and, consequently, has only thirty-five points left; whereas his required *minimum* is fifty points. Some examiners ignore all this, and pass their candidate. Others, as certainly, refuse to pass him or her. Hence, a certain amount of injustice is perpetrated, but with the best intention on the part of the judges. Now we are decidedly of opinion that—always provided the judges are most capable, and thoroughly well qualified men—it is desirable to leave a great deal to their discretion, and to avoid strictly tying them down to judging by points. At all events, a thorough revision of these rules seems to be imperative, and we commend the subject to the consideration of those in authority.

Water for Bees.—We thank Mr. Boyes for his suggestion of filling the water-troughs with cork-dust, which we shall certainly try. When the wooden floats are cut to fit the troughs there has been no loss of bee-life with us, the vessels always being kept full. We have tried filling with sawdust and gravel, both of which answered well.

Where there are ponds, lakes, or running streams in the immediate vicinity of apiaries, an artificial supply of water is unnecessary, especially if the above are covered by water-lilies, or other aquatic plants, on which the bees may rest while sipping.

BEE-KEEPERS' VOCABULARY;

OR, GLOSSARY OF TECHNICAL AND SCIENTIFIC WORDS USED IN WORKS UPON BEE-KEEPING.

Adulteration of Honey.—Glucose is used by unprincipled dealers either as a substitute for honey or mixed with it, and this mixture is sold under various names. Sugar syrup, starch, chalk, plaster of Paris, and pipe-clay, are mentioned as having been used. There are heavy penalties for adulteration, and every bee-keeper should use his best endeavours to bring such fraudulent dealers to justice.

Adulteration of wax.—Ceresin, paraffin, starch, clay, resin, tallow and suet, are used to adulterate wax, which alter its melting point and specific gravity. Wax having a melting point below 145° Fahr. may be considered as impure.

Adynamic. *a.* (*Gr. a*—not, and *dunamis*, power.)—Weak, destitute of strength owing to disease.

Aerate. *v. t.* (*L. aër*, air.)—To put air into. To supply with carbolic acid; to subject to the influence of the air by the natural organs of respiration through the spiracles and tracheæ.

After-swarm.—A swarm of bees which leaves the hive after the first swarm, and is accompanied by a virgin queen.

African bees.—Bees natives of Africa only, such as Apis Adansonii, fasciata, unicolor, nigritarum, scutellata, and Caffra.

Air-sacs or vesicles. *n.*—These are enlargements of the tracheæ, or air-tubes, and lie in the fore-part of the abdomen. They can be filled with air at the will of the insect, and enable it to alter its specific gravity, thus rendering it better able to support itself on the wing with as little muscular effort as possible. They are very large in the worker and drone, but much smaller in the queen, owing to the room occupied by the ovaries.

Air-space. *n.*—Usually called dead air-space. This is the space in double-walled hives filled with air, and constructed in such a way as not to admit any external air. Although such hives are preferable to single-walled, they are not as good as those packed with chaff and other materials, for air will circulate and does not remain stationary, therefore the heat carried from one side to the other becomes dispersed and wasted.

Albino drones. (*Sp.* from *L. albus*, white.)—Drones with white heads and white eyes, quite devoid of colour. Sometimes the eyes are red. They are not uncommon amongst crosses of black bees and Italians, are perfectly blind, and are supposed to be diseased. (*British Bee Journal*, vol. xv. p. 18.)

Albinos. *n.*—The term is applied to a variety of Italian bees lighter than usual, and which have distinct rows of white hairs. Professor Cook says they are not a distinct race, and that he has often noticed among Italians the so-called albinos.

Albumen. *n.* (*L.* from *albus*, white.)—This enters largely into the composition of the body, and is that form of nitrogenous food which goes to construct the nerve substance. Bees derive it from pollen. Albumen, in the shape of white of egg, has been long used by the Germans as a stimulant in spring.

Alcohol. *n.* (*Ar. al.* the, and *kohl*, fine powder.)—A pure spirit which can be produced by distillation from fermented honey, and is the intoxicating principle in mead, metheglin, and hydromel. It is used by bee-keepers to dissolve salicylic acid or thymol (remedies for foul brood), and being a ready solvent of propolis is also used for the removal of this from the hands.

Alien queen. (*L. alienus*, fr. *alius*, another.)—A foreign queen, or one belonging to a strange hive.

Alighting-board. *n.* (*A-Sax. lihtan, alihtan*, to descend, alight.)—The projection of the floor-board in front of entrance; that part on which the bees alight before entering the hive.

Aliment. *n.* (*L. alimentum*, fr. *alo*, I nourish.)—Nutriment; food which nourishes.

Alimental. *a.*—Supplying food that nourishes, as *chyle*, is alimental.

Alimentary canal.—The duct by which the food is conveyed through the body and the useless parts evacuated. It commences, in the bee, at the mouth, and consists of the œsophagus, honey stomach, chyle stomach, small and large intestines, and ends with the anus.

Alternate. *a.* (*L. alternatus*, fr. *alterno.*)—Distance-pins and broad shoulders are put on opposite sides of the ends of top bar, and are said to be placed *alternately.*—To change one frame for another reciprocally, as in uniting two colonies.

Alveole—alveolus. *n.* (Fr. *L. alveus*, a hollow vessel.)—A cell in a bee-hive.

Alvine. *a.* (Fr. *L. alvus*, the belly.)—Relating to intestinal excrements.

Ambrosia. *n.* (*Gr. ambrosia*, food of the gods, supposed to give immortality, fr. *a*, not, and *brotos*, mortal; *ambrotos*, immortal. It was often confused with nectar, the drink of the gods, one of the ingredients of which was honey).—The name given to pollen and bee-bread by C. Butler and other ancient writers; also called 'beghonie,' because of the pellets of pollen carried on the legs.

Ammonia. *n.* (So called from Jupiter *Ammon*, near whose temple it was first discovered.)—A volatile alkali used in solution in water and called *liquid ammonia.* Used by some to relieve pain caused by the sting of a bee.

(*To be continued.*)

ASSOCIATIONS.

IRISH BEE-KEEPERS' ASSOCIATION.

The annual general meeting was held on the 5th inst. The chair was taken at first by Mr. Tipping, afterwards by Rev. Thos. Lindsay. There were present also Miss E. E. Rutherfoord, Rev. P. Kavanagh, Dr. Knight, Mr. Millner, Mr. Read, Mr. Sproule, and the Hon. Sec. Mr. Chenevix. The report and balance-sheet for the year 1887 were adopted with a vote of thanks to the auditors. Votes of thanks were unanimously passed to Dr. Traill for the gratuitous use of his rooms for meetings, and to the press for great services kindly rendered to the Association. Lord Ardilaun was re-elected President. The Vice-Presidents, Treasurer, and Secretary, were also re-elected. Miss E. E. Rutherfoord was elected as an additional Vice-President, and Messrs. Gillies and Read were elected auditors.

Mr. Sproule and Mr. Read were appointed scrutineers to examine the voting papers for the election of the new committee. This was no light task, as fifty-four of these papers had been sent in. The result of the examination was that the following were declared elected as the acting committee for 1888-9:—R. Sproule, Rev. P. Kavanagh, A. Traill, LL.D., J. M. Gillies, J. K. Millner, E. P. O'Farrell, M.D., M. H. Read, S. K. Twigg, C. F. Knight, M.D., John Jones, M.D., J. O'Reilly, D.L., T. G.

Barlow, E. Byrne, J.P., Rev. R. Seymour, J. Barnes. After some discussion it was resolved that in Rule VII. for the words 'in the second week in February' be substituted the words 'not later than April.'

There was an interesting debate as to the best method of forming depôts in various parts of the country for the sale of members' honey, in addition to the depôt which already exists in Dublin, and the Committee were authorised to grant sums of money in aid of such local depôts. Copies were distributed at the meeting of a circular, which Messrs. Abbott Bros., the Association's agents for the sale of honey, are issuing, with the sanction of the Committee, to grocers and other dealers in Dublin.

The following have been appointed Hon. District Secretaries for the counties prefixed to their names. For Cork, Mr. C. E. Beale; King's Co., Mr. R. T. Croasdaile, J.P.; Fermanagh, Rev. D. E. Dickson; Waterford, Mr. W. E. L'Estrange Duffin; Wexford, Mr. T. Elderkin; Sligo, Miss L'Estrange; Mayo, Mr. W. Morony; Tipperary, Mr. T. G. Barlow; Louth, Miss E. E. Rutherfoord; Meath, Rev. R. Seymour.

BEDFORDSHIRE BEE-KEEPERS' ASSOCIATION.

A meeting of the above Association was held in the Blue Ribbon room, Bedford, on Saturday afternoon, March 24th, under the presidency of the Rev. Dr. Wray, of Bedford. Amongst those present were Mrs. Edwards, Messrs. E. E. Dymond, Sydney Street, W. James, Turtle, Johnson, J. Pestell, and the Hon. Sec. (Mr. W. Rushton, of Felmersham).

The Chairman stated that the meeting was called mainly for the purpose of drawing up the schedules of prizes to be offered at the various shows during the season. On the motion of Mr. Johnson, seconded by Mr. Street, it was agreed 'That there be an additional class for cottagers, in which prizes shall be offered for the best six 1-lb sections of comb honey.' Mr. Street proposed, Mr. Johnson seconded, and it was carried unanimously, 'That prizes in Classes I. and II. be all of money as in the other classes, and that the silver medal be offered for the best exhibition of comb honey in any class, and the bronze medal for the best exhibition of extracted or run honey in any class.' Mr. Johnson moved and Mr. Turtle seconded, 'That two prizes in money be offered at the Bedford Show for the best exhibition of bees-wax.'—Carried. It was resolved on the motion of Mr. Johnson, seconded by Mr. Pestell, 'That the prizes offered at the Sandy Show be equal in amount to those offered at the Bedford Show.' Mr. Johnson then suggested 'That the medals (silver and bronze) given as prizes by the B. B. A. be offered elsewhere;' but it was decided to discuss the matter at a future meeting. Mr. Johnson proposed, and Mr. Dymond seconded, 'That the same amount in prizes be offered at the Woburn Show as last year.'—Carried *nem. con.* A short discussion then ensued in regard to the entry fees, and it was ultimately agreed on the proposition of Mr. Johnson, seconded by Mr. Pestell, 'That the same entry fees be charged at the Woburn Show as at other shows.' Mr. Johnson moved the following resolution, which, having been seconded by Mr. Pestell, was carried unanimously:—'That the expert be requested to report any cases of "foul brood" he may meet with, and ascertain on what terms the owner would allow the infected stocks to be destroyed, and that the Secretary be authorised to pay a fair amount in compensation.'

Foreign.

BELGIUM.

An interesting Apicultural Exhibition will be held in Brussels from the 11th to the 23rd of August next. There are seventeen classes in six divisions, and the prizes consist of medals and money. We hope some of our manufacturers will make a show because, owing to the circulation of the French translation of our *Guide Book* in Belgium, many bee-keepers have there adopted our plan of hives and methods. Application for space must be made before 15th May next, and full particulars may be had by addressing Monsieur le Secretaire des Concours Internationaux d'Apiculture, Jardin Botanique, Brussels. Exhibits coming from other countries than Belgium pay half rates on Belgian lines.

SOUTHERN CALIFORNIA.

The honey-bee was introduced into Southern California in March, 1855, by Mr. O. W. Childs, who purchased a few colonies in San Francisco, paying $100 per colony for them at that port. Under his care and management, the bees multiplied and produced large quantities of comb honey, which he sold readily at $1 per pound. His success started a boom in the bee business, and in three years afterwards nearly every American resident in Los Angeles city had bees to sell, but the price was a shade lower than that paid by Mr. Childs in San Francisco, for many were anxious to sell their bees at $5 per colony. The price of honey had gone down to 15 cents per pound. Swarms of bees had escaped from the apiaries and located in hollow trees, clefts in the rocks and holes in the ground, so that the land was literally flowing with honey. About this time the fruit-growers began to complain that the bees destroyed fruit, and most of the bees were removed to a distance from the city and located in the foothills and at favourable spots, along the foot and sides of the mountains. In their new homes the bees produced a better quality and a much greater quantity of honey, found in the bloom of the black and white sages that abounded in the hilly and mountainous regions, besides the nectar-yielding indigenous shrubs and plants so abundant in Southern California in those days. From 400 to 500 pounds of honey per hive was considered a fair yield; and as the quantity of honey increased the price decreased, so that 4 and 5 cents per pound was about all that good honey would command. Most of the honey was shipped by sea to foreign countries. A small quantity found a market in New York. The crop of honey in 1876 was enormous, thousands of tons being gathered in Los Angeles county alone, and equally large yields were produced in San Diego county, one person being credited as the owner of 6000 colonies of bees and producing $50,000 worth of honey and beeswax. The next year, 1877, proved most disastrous by reason of an extremely dry season. Thousands of colonies of bees perished for want of food, and the spring of 1878 found many apiaries entirely destroyed. Discouragement took a fast hold of the average bee-keeper, and to such an extent that he quitted the business in disgust and never embarked in it again. Low prices for honey have been the rule since 1876 until the present year, when, by reason of a short crop, and the meagre supply of honey on hand, both in California, the eastern States, and the West Indian Islands, the price of honey has gone up nearly one-half more than it was one year ago, and this right in the face of low-priced sugar, an article that has heretofore governed the price of honey to a great extent.

Amongst the men of means now pouring into Southern California in search of a salubrious climate and a rich soil, that has never failed to give a fine crop of fruit in a hundred years, no doubt many may be found who have in their old homes handled the honey bee, either for profit or pleasure—that pleasure derived from investigating the habits and peculiar instincts of the most wonderful creature in animated nature, seemingly endowed with an intelligence that man himself can hardly measure. To such men, coming, as they mostly do, from northern latitudes, where winter care of bees is often greater than the care and labour bestowed in summer, I

would say, Take hold of the bee business in this land of sunshine, where, on an average, there are not 15 days out of the 365 of the year in which the bee is not on the wing—in this land of perpetual bloom, where the honey bee may gather nectar every day in the year. Take hold with your experience, and, keeping step with the progress and advancement that permeates every other branch of business, help the honey bee to gather and store the unlimited quantity of nectar that burdens the bloom of millions on millions of flowers in this favoured land of ours, and save from the wild winds this wealth of sweetness that would otherwise be for ever lost to mankind. The health-seeker can hardly find a business so conducive to perfect restoration of health, and the student of science can nowhere find a field that will afford a more interesting and absorbing study than that furnished by the apiary. Very many of our prominent bee-keepers have turned their attention to town sites and corner lots, quitting a business that has heretofore yielded them health and wealth, without the risks of speculation, and to-day there are fewer men in the business than there were fifteen years ago.

The orchard and vineyard, the grain field and town site have displaced many a splendid apiary that was considered a good property three or four years ago. Our extensive mountain-ranges afford an abundance of bee pasture in localities where the plough, the orchard, and vineyard can never go, and the very best use that such places can be put to is to make them the home of the honey bee. San Diego, Ventura, Los Angeles, Santa Barbara, and San Bernardino counties ought to maintain 500,000 colonies of bees, that would produce $5,000,000 worth of honey and half a million dollars' worth of beeswax per annum. Nature furnishes the raw material; the honey bee, under proper handling, will throw in the necessary amount of industry, if man will take the trouble to throw in a little industry and skill to give to commerce this vast amount of wealth that would add so greatly to the pleasure of the palate, as well as to the health of humanity. For it is a fact that pure Californian sage honey contains medicinal properties that, properly used, will add greatly to the health of most people.—C. N. Wilson.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

OUR HONEY IMPORTS.

The value of honey imported into the United Kingdom during the month of March, 1888, amounted to 284*l*. [From a return furnished by the Statistical Department H. M. Customs to E. H. Bellairs, Wingfield, Christchurch.]

CYPRIANS AND CARNIOLANS.

[1576.] From Great Britain and from America letters similar to the following have so often been received by me that I deem the answers of sufficient general interest to warrant their publication on both sides of the Atlantic. They are given in accordance with my experience and honest convictions. I would explain that I sent Mr. Group imported Cyprians in 1885, and again in 1886, direct from Cyprus by letter-post.

Ranchtown, Penn., U.S.A., Feb. 23rd, 1888.

Mr. Frank Benton, *Laibach, Carniola, Austria.*

Dear Sir,—1. Are the Carniolan bees as good honey-gatherers as the Cyprians?

2. Will they at all times defend their hives?

3. Are the queens as prolific as the Cyprian and Syrian queens?

4. Do you consider them as well a defined strain or race as the Cyprians? The Cyprians, according to my experience, are a far better defined race than the Italians. When crossed their markings are transmitted much farther. I am inclined to give the Germans the next place. I have experimented with the German, Italian, and Cyprian races.

5. How do the Carniolans winter in confinement?

I would like to have this information as early as possible, but should Mr. Benton not be at home, I will esteem it a favour if the receiver hereof will transmit it to him.

Respectfully,
John W. Group.

Answers.

1. No; but they are good both as honey-gatherers and comb-builders, and they seal their honey in such a manner that the combs look whiter than those sealed by Cyprians, Syrians, Palestines, or Italians.

2. No. If made queenless, they are thrown into greater excitement than are other bees under the same circumstances, and if deprived of their brood at the same time are frequently so disconcerted as to neglect for the time being the defence of their hives. At other times, that is, under ordinary circumstances, they are most excellent defenders of their hives.

3. Carniolan queens are not, as a rule, as prolific as Cyprian and Syrian queens, but are far more prolific than black or Italian queens. The best Carniolan queens do not fall far short of Eastern queens as regards prolificness.

4. I do not. Mr. Group is quite right in saying that 'the Cyprians are a far better defined race than the Italians, and when crossed their markings are transmitted much farther.' And the same thing is true of Cyprians as compared with Carniolans or any other known race. Cyprians are the 'thorough-breds' among bees—the only ones whose pedigrees are pure, and their long line of ancestors bred in pent-up Cyprus, under conditions that must necessarily have produced a wonderful race of bees, reproduces its individuals to our admiring and covetous gaze,—admiring because these bees transmit their markings and great beauty, and covetous because they transmit also, even should their pure blood be adulterated by several generations of cross-breeding, their wonderful energy in collecting honey. Among European races of bees, Carniolans, according to my experience, are, in all points of importance, decidedly superior, no matter whether we consider their qualities as honey-collectors, or their ability, if their working-force be so directed, to increase rapidly; their readiness to enter surplus receptacles and ability to build and seal over snow-white combs; their gentleness of disposition—their quietness under manipulation, and inclination to adhere to the combs, yet the comparative ease with which they can be brushed or shaken off; their ready defence of their hives under all ordinary circumstances, both against moths and robber bees; their quiet submission when confined for shipment; their readiness in constructing numerous queen-cells; the great prolificness of their queens; the indisposition the workers show towards gathering propolis to daub up sections and glue frames solid; the greater size and individual strength of the workers; their ready submission upon the application of smoke, if perchance they may have been aroused by rough manipulation; their disinclination to attack any one who merely enters the apiary; their hardihood, enabling them to withstand the severest climates and

their quietness and compactness in their winter clusters making them remarkably good winterers; if we test them in regard to any of these points, side by side with any other commonly cultivated European race of bees, all must yield the palm to the silver race of Carniola. Mr. Samuel Simmins, in his excellent work, *A Modern Bee-Farm*, published last autumn, tells the whole story in one sentence when he says of Carniolans, 'Scarcely a fault can be found with them.'

I concede for the blacks what Mr. Group intimates he is inclined to credit them with, viz., transmitting power. The Carniolans are also well endowed in this respect, but if the blacks or Germans have, in comparison with them, nothing that is superior to transmit, pray of what use is the bare power to transmit, even supposing that to be greater than is possessed by any race except Cyprians? To transmit, forsooth, their tawny, shaggy coats, their black tails, their proclivities for robbing, their kindly disposition toward moth-larvæ, their keenness in spying out, the moment they stick their heads forth from between the top-bars of the frames, a soft spot in the back of any man's hands, and their agility in getting there, while their fellows left in the hive do mostly come on the scent of their predecessors' tails? Or is it to hand down to the coming bee that transcendent quality or sense whereby this aforesaid German bee invariably and instantly becomes aware of the intrusion of a stranger's nose within twenty rods of its alveary domicile, and the unexampled self-forgetfulness it exhibits in the punishment of this offending but otherwise very respectable human member? But enough of this. Americans should have no prejudice in this matter, for we have no *native* race of bees: all are imported foreigners; and it only behoves us to select the best to build upon. And are we to remain idle, while breeders of horses, of cattle, of sheep, of swine, of poultry, of fancy pigeons, and even of pet stock, by importing, selecting, and combining, are producing almost any and every form and quality desired? And for us to commence with the common black bee—the 'scrub' among bees—would, I consider, be equivalent to the cattle-breeders going back at the present time to the 'scrub' among bovines, because forsooth he may have discovered that his developed breed will not bear the neglect that his common stock would, and still preserve the character it had when he first made its acquaintance; or it would be like the horticulturist who should ignore the splendid fruits already existing, and persist in cultivating the sour, gnarly natural fruit; or the woollen manufacturer, who should go back to the spinning-wheel and hand-loom, because the steam-loom costs a deal of money and eats up tons of fuel, or because, perhaps, its tremendous clank and clang do not please him! No, friends, though all these old things had their uses, and, doubtless, there are many still for whom such things are best adapted, those who lead must have what produces the best result—what yields the greatest returns. These cannot afford to ignore any of the progress the world has made in their respected branches. No more can the breeder of bees, who, by selection and combination, expects to attain greater and more satisfactory results than have heretofore been reached, afford to ignore the great value of the breeding material which the past few years have placed at his disposal. And as Nature herself has kindly done part of the work, he cannot afford to go over it again, but should begin with the races she has partly perfected.

5. Excellently. They have been developed in a cold, mountainous region, where snows are deep in winter and rains often prolonged and even cold during the summer season. The past winter bees have been confined here without a good flight for four months continuously. Snow has been over two feet deep in the open country, while mountain ravines are drifted full. The thermometer several times indicated 13° Fahrenheit below zero. Very possibly this question is meant to refer to wintering in cellars or special repositories. In Carniola bees are not wintered in cellars, so far as I know. The native bee-keepers pack their shallow box-hives (which are 6 to 8 inches deep, 12 to 18 inches wide, and about 3 feet long) side by side and one above another in old-fashioned bee-houses or sheds, and surround them with moss or fine hay, letting a mat or trap-door close the front during intense cold or when the ground is covered with light snow and the sun is bright. In this sort of repository colonies, with abundant stores, winter well.—Frank Benton, *Laibach, Upper Carniola, Austria.*

GRIQUALAND BEES.

[1577.] I send you some bees from this district, and would you kindly inform me, through the columns of your *Journal*, what kind they are? They work fairly well, but are very troublesome when the hive is doing well, as they sting a good deal then. Another question I should like answered, and that is, I found, on opening a queen-cell on two occasions, a worker-bee only inside, and dead, and on another occasion only some stuff inside which appeared to be a mixture of wax and pollen; these cells were sealed, and to all appearance just the same as the ones that contained queens. Only this summer have I and a few others gone in for bee-keeping. I think we shall do well when we get into it. Both your *Journal* and book are of great assistance. We have no foul brood to contend against, nor the wax-moth. I only hope foul brood won't be brought into the country through foundation-comb, some of which we have on the way out.

We have about seven months' summer (our seasons are not well marked here, and we have practically only summer and winter) and a dry, though cold winter. So I think in time, and with experience, we will go ahead.—Regd. Tyrrell, *Griqualand East, Cape Colony, South Africa, January*, 1888.

[The hive-bees forwarded are the same as those described by Dr. Stroud, Port Elizabeth, South Africa, see *B. B. J.*, vol. xiv., p. 188. Dr. Stroud would be pleased to give any advice required as to treatment. Most of the bees have three yellow bands, as Ligurians, Cyprians, &c. The queens and drones are the usual size. Like Dr. Stroud's South Africans, the workers are smaller than those of any other cultivated race, and the presence of darker bees shows them to be hybrids, though generally well marked. It is not unusual to find workers in queen-cells. After the queen is allowed to hatch, the worker goes in to clear up; its 'friends' kindly seal the covering, and the poor inmate, forgetting its first cradle, fails to find an exit—and dies.—Ed.]

RAILWAY RATES.

[1578.] Our thanks are due to Mr. Griffin for bringing this subject so practically to our notice. It is one which presses very heavily on all our home productions. I am glad to hear he has been so successful in his negotiations with the Railway Companies in his district, but I fear so long as Railway Companies are allowed monopolies—and they take precious good care to be well represented in Parliament—we shall never see the tariffs put on a much more liberal basis.

With respect to Railway Companies and their rates, I will, with your permission, Mr. Editor, mention a case where your humble servant was nearly made to smart dearly for the carriage of his hives and bees. Well, I wanted to send some of my hives to the heather—over fifty miles away—so I ordered a van for their conveyance in the usual way, and at the usual cost, and took thirty hives to the moors through which the Company's line

passed. All went well, not a single hitch or mishap of any kind, and the bees did wonders, for in about a fortnight many of them were hanging out as if preparatory to swarming, and the fronts of the hives, too, were covered with bees. Of course those in this condition had filled all up, sections and everything (though the sections were not yet sealed over). I returned home in high spirits at the very cheering prospect, determining to send up another consignment of crates filled with empty sections, when, lo! at home there was a note for me, a notice from the Railway Company, stating that I should not be allowed to bring my hives home again *unless I paid the ordinary parcels rate on them.* I made a rough guess, and made the cost on that scale come to about 20*l.*, taking in the weight of hives, combs, &c. Well, this was a damper. What to do I did not know, but decided not to send any more crates—no use making the hives heavier, there would be enough to pay on them already. Well, September came, the weather broke, and I wanted my hives home, but the Company, or rather the official who had charge of this district, was obstinate. In vain I referred them to the price stated in their own time-table; in vain I stated I was paying the price always charged before; in vain I protested against having been allowed to take them unless they were prepared to bring them back at the same rate—he was obdurate. Well, October came, the days much shorter and the nights colder; it became a necessity for me to have my bees somehow, so I did what I ought to have done at first if I had only thought of it. I got the station-master who had charge of them to order a van for their return home. I ought to state that he was under another official, a gentleman at head-quarters, whose name was highly spoken of whenever I heard it mentioned. Well, I went over and fetched all away, paying the station-master the usual charge, which he took without a murmur. But I was not out of the wood yet, for on arrival at Beverley I was met by the booking clerk, who told me I could not have my bees unless I paid the demand of parcels rate. However, I was ready for him, and handed him the receipt for the carriage. He then said they could not be delivered that night—in fact, not until he got orders from his superior, the obnoxious official. I replied that unless I got my hives out of the van not only that night but at once, the bees would all be suffocated, and that to save them I should open all the doors and let them out, and compel the Company, as I had paid the carriage on them, to deliver them at my garden, adding that I pitied the men who had to enter the van next day to get them out. He then stated that under the circumstances I had better take them; so, having two men with a spring cart in waiting, I quickly landed them safely into the garden, and so ended as disagreeable a piece of business as I care to have to do with, and all through the obstinacy of an official who I afterwards heard was—shall I say it—yes, a jealous bee-keeper.—F. Boyes, *Beverley.*

RAILWAY RATES.

[1579.] Replying to inquiries on this subject, in reference to my previous communication, p. 133, the classification on which the charges for honey are based are the regular *Clearing-house rates*, which are, or supposed to be, the guide for all railways throughout the United Kingdom; but these are subject to alterations from time to time when agreed upon under certain circumstances.

I mentioned on the previous occasion three classes. The following are the rates between two particular stations on the G.W.R. system:—

Class 2 would be at the rate of	....	10*s.*	
Class 3	„	„	.... 12*s.* 11*d.*
Class 4	„	„	.... 15*s.* 10*d.*

Or take two other stations at a greater distance:—

Class 2 would be at the rate of	....	34*s.* 2*d.*	
Class 3	„	„	.... 39*s.* 2*d.*
Class 4	„	„	.... 49*s.* 2*d.*

From these figures it will be seen that it is worth moving in the matter, as the saving would be considerable.

But although the various lines work on the *Clearing house* classification, yet quantities of honey under 5 cwt. are charged on a sliding scale; and here again we get considerable variation, as many lines have a scale of their own, and other railways have a sliding scale which they use for competitive places (where other lines touch) and another for their own stations where they are masters of the situation.

As far as I can ascertain the G.W.R. and the M.R. have only one scale for all stations, but the L.S.W.R. have two, and the S.E.R. work on a different system. For instance, 28 lbs. to be charged at the rate of 40*s.*, by the G.W.R. would be 1*s.* At the same rate by the L.S.W.R., if to a competitive station, would also be 1*s.*, but if to another place the charge would be 1*s.* 3*d.*

The alteration to Class 2 will, I hope, soon be an accomplished fact. The G.W.R. are doing their best. I hope others interested in the matter will not discontinue their efforts; they must remember that one or two applications will not carry the day.—Wm. N. Griffin.

DIPLOMAS.—SECTIONS.

[1580.] The remarks of 'East Grimstead' on 'Honorary Awards' in your number of March 22nd, seem to me worth the consideration of the B. B. K. A. Of course, I speak from an outside point of view, and do not know how the suggestion might work. One can imagine his being 'posed' on being asked if he had a certificate, and being mortified also at being obliged to confess that he did not possess one. At the same time, he might have been well worthy of it, though it must be allowed that (as in the professions) the diploma, or whatever it may be called, is the security to the public. In some respects the parallel does not hold good, and I venture to think that it would be a graceful and much-appreciated compliment if the B. B. K. A. were to formally confer the title of Honorary Expert on certain persons who might be recommended by their county committees, on notice being given that they were prepared to receive names.

I know of an old bee-keeper who has acted as third-class judge, though not certificated! (The first certificated man must have been examined by one not certificated.) His relations to others would make it improper for him to incur the risk of a closed eye through not wearing his veil. Yet, if there is a queen to be found I think he can find her, and the ordinary manipulations of fifteen or sixteen hives are common things enough to him; while not only the county bee-tent, but many literary associations, have called on him (not in vain) for lectures, and no one who wants information seems to hesitate to apply to him for it. Now if such a one held the title of (say) second-class expert it might deservedly save him from a similar unpleasant fate to that which befell 'East Grinstead,' and spare his association at the next exhibition from a suspicion of weakness.

The power to produce a novelty in sections must, one would think, be well-nigh exhausted. If foundation is to be fixed in the sides one is inclined to ask, Which *is* the side of a $4\frac{1}{4} \times 4\frac{1}{4}$ four-way section? There is, it may be admitted, the advantage that they can be turned any way, inverted or semi-inverted. The *principle* of a clip between the two halves of a side was surely that of Abbott's old long sections of ten years ago, where the top was formed of two laths, moveable, kept in place when fitted by small brads. We have now a little slit in the top of a one-piece section, or a fair kerf from end to end of the quarter in which is the dovetail. Will no

one advance a little further? I never let my dovetail be seen on top. How shall I keep them at the bottom, and yet have as much security for a full piece of foundation as is given by the new inventions? I do not think I have one slip in a hundred of the (about) half-size pieces which I use, but I might wish to use full pieces and not show the dovetails. I think of a plan, but I have neither leisure nor appliances to work it out.—S. C.

AN IRISH EXHIBITION IN LONDON.

[1581.] An Irish exhibition is to be held at Olympia, Kensington, to open on the 4th of June, and to close on the 27th of October. Lord Arthur Hill is the Secretary. Department A is devoted to Agriculture; hives, and bee-appliances, manufactured by Irish firms, will be admissible in section 4, and in section 5, 'Products,' the following are named:—Milk, cream, butter, cheese, eggs, HONEY, bread, biscuits, flour, vegetables, cereals, roots, hops, seeds, tinned meat, compressed animal food, foods of all kinds.'

This will be a good opportunity for the Irish Bee-keepers' Associations to show how the country has benefited by the visit of Messrs. C. N. Abbott and W. Carr, who, under the auspices of the B.B.K.A., made a lecturing tour through Ireland, the expenses of which (some 80*l.*) were borne by that Association. It will be early for this year's honey, but that of last year will be eligible, and can be supplemented by this year's honey later on.—J. M. HOOKER, *April 7.*

KOERBS' COMB FOUNDATION.

[1582.] With regard to the new Koerbs' comb foundation, has it occurred to any of your readers, that inasmuch as there are cells on one side only, not more than one half the number of bees usually working on the ordinary comb, would be able to work on the Koerbs' foundation; and moreover, that it is probable that the bees would be prevented from manipulating either the comb or their honey on cells of double depth with that speed which they would be able to exercise on the foundation now generally employed?—W. J. MUCKLEY, *Lowes water.*

SUGGESTIONS.

[1583.] In your issue of March 1, your correspondent, Mr. Shea, gives a few useful hints to bee-keepers in his communication (1510) under the above heading, and I hoped some one more capable than myself would have given in return a simple mode of shading the entrances from the glare of the snow; but as no one has replied to his request I shall be pleased to give him my experience if he will accept a hint from a working man. He says, 'Porches I have discarded as not necessary;' true, they are worse than useless as often made, but if they comprise a slanting board not less four inches wide, and are placed rather low across the entire front of the hive, you have always a shade on the entrance and a dry promenade for the bees in all weathers.

Another plan, very effective, though not so simple as the above, is to make the alighting-board work on hinges, fastened to the floor-board, and which may be hooked to the porch as soon as winter commences, and which need not be lowered until spring, as the bees can go in and out freely at either end of porch.—YORKSHIRE NOVICE.

GARDENERS AS BEE-KEEPERS.

[1584.] I have just been reading your new monthly paper, and most heartily congratulate you on its issue, and also wish you every success. I was much pleased with the letter of the 'Village Blacksmith,' and it put the idea in my head that perhaps you might find space in a future issue for my experiences as a *bonâ fide* cottage bee-keeper.

I am a gardener, and I think every gardener ought to keep bees. I have kept some now for six years, the first four of which I kept them in straw skeps, and used supers on the top, but got but little honey. Then a change came o'er the scene. A shining light arose in the shape of a new school-master, who not only knew something of the modern systems of bee-keeping, but was willing to share his knowledge with anyone else. Under his tuition I learned some of the mysteries of the bar-frame hive, and also how to make one—rough, certainly, but still it answered for a time. I have made several since then; but I now buy 9-inch deal boards, and make them 18 × 20 outside measurement, and use a doubling box on the top.

In the autumn of 1886 we commenced driving, and I got stung so badly that I thought I would give it up, but still I persevered, and can now drive bees with anyone. I had four lots, which I placed in two hives; they wintered well, and came out very strong last spring. One I worked for sections, and the other for extracted honey. I commenced extracting June 21st, and got 26 lbs., and by the end of July my hive had yielded me 95 lbs., and the other about 50 sections, so I think on the whole my first season turned out well. I am now the happy possessor of seven colonies, and hope to give you a further account of my experiences later on.—KENTISH BEE.

[We shall be most pleased to receive the account of your experiences, and we would fain hope that the day may soon arrive when all gardeners will be bee-keepers.—ED.]

FIXING FOUNDATION.

[1585.] I forward you a description, with sketch, of the way I fix foundation in my frames for insertion in the *Journal* if you think it of sufficient interest.

Cut two strips of wood $\frac{3}{8} \times \frac{3}{8} \times$ length of inside of frame, and nail them to the top of the inside of frame on each side of the foundation, *pressing the strips well against the foundation.* Nail with $\frac{3}{4}$ in. wire shoe nails. If half sheets only of foundation be used, this plan works perfectly. I have never tried it with whole sheets without wire, for I always wire the whole sheets with diagonal wiring, one wire passing on each side of foundation. I embed the wire with an 8*d.* brass wheel, which cooks use for cutting out pastry devices. There could not be a better embedder, so I think. The $\frac{3}{8}$ in. strips need not be the full length of inside of frame; 8 in. in length works well, if wire be used, or three blocks 2 in. in length spaced along the frame would do. Strips the full length of frame have the advantage of strengthening the top-bar. In my opinion no part of the frame should be of less than $\frac{3}{8}$ in. stuff.—HIVE.

WIDTH OF SECTIONS.

[1586.] In discussing this subject, in which we find considerable diversity of opinion, we must carefully weigh the advantages, or otherwise, of narrow *v.* the two-inch width. For my own part, I am strongly in favour of the latter, for reasons which I shall briefly endeavour to point out. It has been decided that the $4\frac{1}{4} \times 4\frac{1}{4}$ section is the best for many reasons. The $1\frac{1}{2}$-in. and $1\frac{3}{4}$-in. width sections have their supporters; they look neat and are a handy package; but the cost will be the same as a 2-in. section. The foundation, &c., will be the same, and as the quantity of comb-honey they contain is less, the cost of production will be greater. If the bee-keeper works his bees for exhibition purposes and his honey for home consumption, then he will be the best guide as to which width is preferable; but if the apiary is to be a paying concern, and the sections

are worked for sale, then my experience would strongly be in favour of the full-width sections. We have noticed that the cost of production is the same for a narrow and wider section; therefore, if the chances of all were equal, then the 2-in. section would produce the best profit. But where a sale for one narrow section is obtained, a market is open for six of the wider. Many firms will not look at a narrow section, and as supply and demand must be considered, it devolves on bee-keepers to take the wants of the public as a criterion, and to decide on only having $4\frac{1}{4} \times 4\frac{1}{4} \times 2$ sections. As I am now only alluding to which width section will find the best sale, I will not speak of the merits of two or four bee-way sections, as long as the 2-in. width is adopted, either of these plans will not be against their market value; and this allows the bee-keeper some diversity of methods of working.—Wm. N. Griffin.

QUEEN INTRODUCTION.

[1587.] I have read with much regret Mr. Bonner-Chambers' letter (1575) in last *B. B. J.* in which he so strongly condemns the Simmins' method of direct queen introduction. I have adopted the system throughout my apiary of fifty stocks, and have never had a failure when I have strictly followed the directions. As Mr. Simmins is the only dealer to my knowledge who guarantees safe introduction, I think it only fair to give an instance which to unbiassed minds will surely negative Mr. Chambers' sentence:—'The system seems a very valuable one for queen-dealers, as they can guarantee safe introduction, telling their customers to look on the third day to be sure, and yet prepare to send them another on the fourteenth, by which time she will be lost in some unaccountable manner.' Having safely introduced five Carniolans to stocks whose queens I had killed as being of a second-rate quality I proceeded to examine hive No. 6 with the intention of killing the queen so as to make room for the sixth Carniolan which had just come to hand. Being struck with the fine appearance of the black queen, I removed her with a frame of brood to a spare hive intending to utilise her as occasion might require. Although at the time I did not recognise the fact, yet I was virtually constructing a nucleus, which is expressly forbidden by Mr. Simmins. This queen was balled and killed on the eighth day by the old bees, returning from the nucleus. I wrote Mr. Simmins a post-card informing him that the queen was killed, but giving no details. By return of post I received a note saying that 'Mr. Simmins will certainly send you another so soon as more come in.' On thinking it over I saw in what way I had departed from the instructions, as explained above, and of course declined Mr. Simmins' offer to replace the queen. Surely the above is strong proof that Mr. Simmins or any other dealer who may guarantee safe introduction is not actuated by any motive so base as that suggested by Mr. Chambers.—E. J. Gibbins, *Neath, Glamorganshire, April 6.*

ALIGHTING-BOARDS.—GIVING SUGAR CAKE

[1588.] I enclose sketches of two devices that might interest some of your readers if you think them worth inserting. Fig. 1 shows one of my hives arranged to prevent young bees being lost by dropping from the edge of the alighting-board, and also to give the young pollen-gatherers an easy entrance to the hive when they alight on the ground. Two small nails are driven into one side of the board (*d*), and a stone or brick underneath supports it, so that there is a run without break from the ground to the hive—the floor-board being, by this means, kept from contact from the ground. A large board is used in a similar manner for hiving a swarm. The common floor-boards are not well adapted for applying such a board, although with a little contriving something similar could be managed without placing the hive directly on the ground. On a warm day, after a spell of cold, the loss of young bees is considerable; and

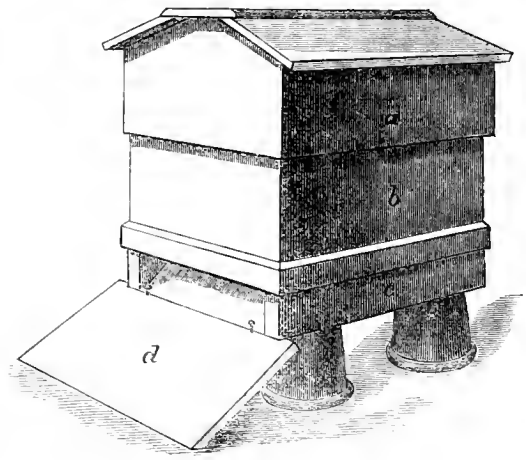

Fig. 1.

then just at a time when they cannot well be spared. The arrangement illustrated provides in the best way against such loss. I find the following a handy way of giving sugar-cake to the bees. A sardine tin has a circular hole cut out of the bottom; this hole is placed over a rounded block C, and the hot cake is poured in to just fill the tin. When set, the block is removed and the cake placed over feed-hold. A piece of glass then forms the cover; the glass allows you to see when the cake is coming to an end. The saw-cut edging of the top of the tin should be removed by melting the solder in a flame cautiously. The hole is cut with a large gouge on a wood-block; 5×4 photo negatives that accumulate as 'wasters' form good covers where available. An inverted cup answers for the block.—Silke.

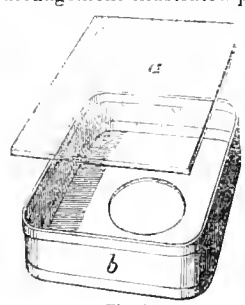

Fig. 2.

IN-AND-IN BREEDING.

[1589.] As a bee-keeper of several years' experience, I can quite agree with Mr. Webster and the writer of 'Useful Hints' on the above subject. I have four races of bees in my apiary, and can now more than double the quantity of honey from the same number of stocks. My hybrid bees last season proved the most productive, some giving over 100 lbs. per colony. I have one frame-hive that contains four races of bees, and the amount of honey they collected last year was astonishing. It is very strong now, and the queen breeding vigorously. It will be a test hive the coming season.

I have read Mr. Boyes' letters with interest at various times for over a couple of years, for we live in the same riding, but I do not know him personally, but this letter may form a sort of introduction to our acquaintance. I do not wish to enter into a paper war with him, but our views certainly differ in point of issue. I think if he once crossed his bees with Eastern races, he would derive the same benefit that myself and many others can prove. In conclusion, we, as bee-keepers and stock-breeders, are very much indebted to Mr. Webster and the writer of 'Useful Hints' for their sound and practical information.—Paul Bielby, *North Grimston, Yorkshire, April 9th.*

Echoes from the Hives.

Cottingham, April 2nd, 1888.—Up to the present date the poor bees here have had a bad time of it. High north winds, rain, snow, frost, and an occasional gleam of sunshine is the state of the weather, so that nothing is going into the hives—even when they *can* get out—only what we put in ourselves. I have placed a frame of wheat-flour next each brood-nest, with a bottle of syrup on the top, and a few eggs are being laid, I believe, in the middle of each day by every queen, or nearly so. I have Carniolans, Italians, and blacks, and by how they are going on now I much prefer the Carniolans to either of the others; they are hardier, stronger on the wing, queens more energetic, and, in fact, far preferable to either Italians or blacks in every particular.—CHAS. HOWES.

NOTICES TO CORRESPONDENTS & INQUIRERS.

E. C. P.—*Obtaining Fruit Blossom Honey.*—Your plan would result in the 'crowding out' of the queen. If there is a sufficiency of orchards—which we, to the best of our recollection of your neighbourhood, doubt—the following plan would be preferable: Stimulate the colonies until they become crowded with bees, then just before the trees are in full bloom, put on the racks. Before doing so, contract the body-box that the bees are forced up into the sections.

T. D. S.—1. *Fastening Brown Paper to Tin.*—Glue will do this very effectually, but we doubt whether this would stand the dampness from the food. We never use such feeders. 2. *Zinc and Syrup.*—Storing syrup in zinc vessels is to be condemned, but in moderately quick feeding from feeders having perforated zinc over feed-hole it is of little consequence. 3. *Queen Introduction.*—See pamphlet advertised in this *Journal*. 4. *Candy.*—Candy cannot be made by boiling fermented honey. We should make vinegar of it. 5. *Echoes from Hives.*—We are always pleased to receive same.

G. J. D., *Barnes.*—1. *Transferring.*—The transferring must not be done until warm weather sets in, say, middle of May. There will then be plenty of time for the bees to repair combs before the honey-flow sets in, which in your district is about the third week in June. 2. *White Substance in Combs.*—The substance seen is mouldy pollen. This is often observed in spring time. The honey which bees usually place over stored pollen has been consumed, consequently it has turned mouldy. The bees will remove it.

REV. F. W. PUDSEY.—*Drone-comb.*—A preferable plan to the one you suggest is: Place two frames half filled with drone-comb outside the cluster of bees, one on each side. Remove any similar remaining frames containing drone-comb from the brood-nest, and store them ready for use in an upper storey when the honey flow commences. Fill up the vacant space, thus caused in the centre of brood nest, with frames containing full sheets of foundation, and close up the cluster of bees by division boards. Insert more foundation when required. Be careful that the drone-comb left in the hive does not contain eggs in the drone-cells. When putting on the upper storey use the Heddon excluding honey-board, and remove the two frames of drone-comb from the lower hive, supplying its place with foundation, to the upper, having first cut out all drone-comb and brood.

HIBERNICUS.—*Solidified Honey.*—We are not prepared to assert that scientific chemistry cannot supply an effectual remedy for the prevention of granulation in extracted honey, but we think very doubtful that such a remedy has been applied to the honey you mention as offered for sale under the condition of 'warranted not to solidify.' Honey which has been submitted to a temperature of 200° Fahr. will not granulate as a rule.

C. HOWES.—*Drone-breeder.*—The chances are about even that the expert is mistaken, that the queen is really an old one, or that she is unfertilised. Any of these three positions may be the correct one in the case you describe. We advise that the queen remain at the head of the colony another fortnight, and if at the end of that time there is no worker brood in the hive, remove her and unite the bees to another colony.

Jo. Ro. Lo.—*Box Hive.*—You have no alternative but to remove the top of this hive and transfer all straight combs into a bar-frame hive. You will find ample details in last year's volume, pages 89, 112, 124, 134, 188, 273, 294, 315, 416, and 512. From April to September is the extreme period for transferring, and during that time no prosperous stock would be without brood. Place all brood-combs in the new hive if at all straight. Fighting will certainly take place if more than one queen is left when uniting. Queens, like ladies, are any age unless you happen to know.

C. HOWES.—We are pleased to note your exertions on behalf of the Yorkshire B.K.A., and wish you all success in your work.

RODONO.—*Plants to cover Wall and Fence.*—We should advise planting *Cotoneaster microphylla* on the wall facing west. As to the wire fence you mention being so much in the shade, it would be useless to plant creepers, for honey secretion. Anything might be planted, such as honeysuckle, jasmine, clematis, climbing roses, &c.; but as the sun has not much access to the screen, little or no honey would be elaborated.

T. H. BUSH.—*Parasites.*—The parasite on your bees is, from your description, the *Braula cæca*. It is not often found on bees in this country; but in Southern Europe and in Cyprus it is very frequently met with. It will most probably die off. They are very active little creatures, and you would have a difficulty in removing them individually from your bees.

A. W. C.—*Moving Bees.*—If the bees have *not* been overhauled this year, we would simply place a piece of perforated zinc over the flight-hole, and secure another piece of perforated zinc over the hole in the quilt used for feeding, and pack them securely, so that the quilts could not get removed during transit, and send them by the pantechnicon, taking care that they were *not* covered up by other packages or a tilt. You will find they would then travel all right, as the weather is so cold. But if the frames have been taken out and the bees overhauled this spring, then—No. 1, Yes; No. 2, No; No. 3, Either.

H. S.—1. *Flour Candy.*—We find our stocks continue to consume the flour candy *after* stimulative bottle-feeding has commenced. No other plan entails as little waste. 2. *Syrup in Winter.*—Syrup must not be given in winter, being too watery it would induce dysentery, as the bees cannot exercise sufficiently to drive off the water. Sealed stores and candy are the only permissible foods in the winter. 3. *Queens raised now.*—Of no use whatever unless they mate in about 5 to 10 days after hatching. 4. *Position of Cluster.*—Not at all unusual. Fresh air is quite as important as warmth and warmth as fresh air. 5. *Hive-maker.*—There used to be a maker of the name you mention advertise in these columns.

D. R. DALY.—1. *Sections on Swarms.*—Yes, at once, with excluder zinc between, and only starters of half an inch foundation in the frames below. 2. *Preventing Swarming.*—Yes. See answer to T. Nixon. 3. *Position of Hives.*—We would advise you to move your bees away from your cow-yard for the sake of the cows; there might be 'ructions' in the hot weather. The hives should, if possible, stand in a sheltered

position, and face any way between east and south or south-west. Thanks for your appreciation of our publication.

HORACE.—*Replacing Old Combs.*—In view of the persistent cold weather, you can wait, say, a fortnight before carrying out your substitution.

J. WALTON.—*Transferring Bees from Box.*—On a mild day—if we ever get one—you should cut the combs out of the frames, and tie them in the Standard frames with about three pieces of tape each, keeping the combs close up to the top-bar. In about three days they will be fixed, and the tapes should then be removed. All bees should be carefully shaken or brushed off each comb before attempting to cut it out. After you have a comb in the new hive, brush the bees into that one.

T. NIXON.—1. *Preventing Swarming.*—Yes, if you adopt Simmins' non-swarming system, *i.e.*, put half-inch starters only of foundation in bottom box, raising the combs already there up into the doubling-box. Extract from the shallow super as may be advisable. 2. *Sugar.*—The sample of sugar will do for dry feeding, but not for syrup-making. It is known by the name of 'Demerara Syrups.'

QUERY.—Some years ago I saw several sections at a show worked entirely in glass, which looked beautiful. Will some reader kindly tell me how they are fastened together, as I should like to work a few this year? Also, is it a fact that honey extracted from *old* comb, or combs that have been bred in, is not so clear as that stored in new; and, if so, why? This is a question of great importance to those who have a lot of spare combs, which are given in upper storeys for extracting purposes; besides which I think all bee-keepers will admit that light honey sells much better than dark, for the simple reason that it is more pleasing to the eye: therefore it behoves us all to produce it as clean and light as possible.—LORDSWOOD.

QUERY.—I should like to ask Mr. Broughton Carr if he finds it necessary or best to wire his 6-in. extracting frames to prevent damage in the extractor?—J. S. W., *Plumstead.*

Received from Mr. William McNally, Glenluce, Scotland, his Illustrated Catalogue of Bar-frame Hives and Bee-keeping Appliances (24 pages.) This is a very compact catalogue of the requirements of bee-keepers, without any redundancy of pages or illustrations.

Received from Mr. S. J. Baldwin, of Bromley, Kent, 'The Bee-keepers' Instructor, with a Catalogue of Appliances' (18 pages.) This 'Instructor' will be found of great service to beginners, as it embodies the very large experience of Mr. Baldwin, and is full of sound information. The catalogue is very extensive, containing a list of all the appliances in use by bee-keepers.

Received from Mr. Rice, of Norwich, a solid-wood feeder, with centre cone and saucepan lid. We consider this would be preferable to the ordinary tin-feeder, as it would tend to retain the heat of the cluster. The price has not been communicated.

Business Directory.

HIVES AND OTHER APPLIANCES.

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BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
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EDEY & SON, St. Neots.
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HONEY GLASS MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BLOW, T. B., Welwyn, Herts.
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NOTICE.

THE *British Bee Journal* is published by KENT & Co., 23 Paternoster Row, and may be obtained of all local Booksellers, and of the following Agents:—

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THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

ROYAL AGRICULTURAL SOCIETY.

We beg to call attention to the announcement in our advertising columns relating to the Bee Department of the Royal Agricultural Society's Exhibition, which takes place at Nottingham in July next, the entries for which close on May 12th. The schedule contains several improved features, notably a class for Appliances, in which the articles to be exhibited are definitely stated. Provision is made for lodging protests against the decision of the judges, and for all exhibits to be staged on the day previous to the opening of the exhibition. We venture to hope that this rule will be most rigidly enforced by the executive; the delay which has hitherto taken place in the commencement of the judging, owing in a great measure to the late staging of the exhibits by a few exhibitors, has been detrimental to the exhibition.

The regulations also provide for returning all fees paid for entries in the Honey Classes providing fourteen days' notice has been given by the exhibitor of his inability to send these exhibits.

The schedule is a considerable improvement on previous years, and will, we feel sure, result in a large number of entries.

COUNTY ASSOCIATIONS.

If there be anything wrong in the working of these useful and valuable societies, now is a fitting opportunity to discover, and to rectify, the mischief. That there is something at fault with the machinery we have not the slightest doubt. We cannot agree with one of our correspondents, that it is wiser to hide our faults. If disease exist, better use strong remedies, and eradicate it before it becomes chronic. Good cannot but result from friendly discussion. We do not offer a panacea for all the ills existing or imaginary; but by exposing deficiencies in some societies, and naming topics for consideration, we may, ere the busy bee season arrives, have once more our County Associations in a position to surmount all difficulties, and sweep away every obstacle.

Besides the wrongs mentioned by our correspondents we know of one Society, of whom the Hon. Sec. is really the only shining light. A large Committee exists (on paper), meetings are called, but the members never put in an appearance, and thus it will be seen that if the Secretary did not move, this Society would soon collapse.

Then another Association has in the past accomplished much, and bee-keeping was raised in that county to its proper footing. It possessed a hard-working Secretary, whose heart was in the work, and who treated obstacles as a pleasure to be overcome. This Association now differs from the former instance, in that it has an indefatigable Treasurer and a good Committee, but the present hon. sec., taking but a slight interest in the cause, does little to further its advancement.

Then, again, we know of several other Societies, whose Secretaries, having to do all the work, are gradually losing heart. More enthusiasm is evidently wanted somewhere. Away, all ye bee-keepers that say the Associations have done you no good! How would you have learnt to keep your bees on scientific principles? How would you have adopted the present system of producing comb honey in a saleable form? How the improvement in the quality of extracted honey? How the meetings where you have met your fellow-apiarians? How the hints for disposing of your surplus produce? How the knowledge of new and improved inventions? How bee-keeping has become a national industry? Nay, how your very existence is owing in a thousand ways to the County Associations of whom you now say, 'They are no use.' Our bee-masters have striven in the past; the books they have written, the rules they have framed, constitute the very essence and basis of an existence as bee-keepers.

These organizations, 'County Associations,' must not, and cannot be allowed to quietly drop. During the past months most of the annual meetings have been held, and it must rest with all true-hearted bee-keepers to consider carefully the present state of affairs, to note their respective deficiencies, and to place their Societies on sound commercial principles.

The bee-keeping industry will flag and retrograde if County Associations are allowed to be a thing of the past. We believe that a certain portion of the work assigned to the Societies has been accomplished; but must this be a reason for inactivity? There is still much work before you to grapple with,

fresh ground to break, new objects to be obtained, and advancement, when attained, will open up new schemes for attainment.

BEE-KEEPERS' ASSOCIATION FOR HULL AND DISTRICT.

On Friday, April the 6th, a meeting was held at the Station Hotel, Hull, for the purpose of forming a branch of the Yorkshire Bee-keepers' Association. There was a fair attendance, and Edward Harland, Esq., who presided, explained that some correspondence had taken place between the Secretary of the Y. B. K. A. (R. A. H. Grimshaw, Esq.) and some one then present, and it was thought that from the fare number of bee-keepers in Hull and its immediate neighbourhood a very good branch association could be formed. After a considerable amount of discussion had taken place, a resolution favourable to the formation of the Association was submitted and carried *nem. con.*

The meeting adjourned until Wednesday April 25th, when it is hoped all interested in the project will attend, for the purpose of electing officers and committee.

Mr. H. Harland, The Elms, Cottingham, Hull, will be glad to receive copies of rules from secretaries of various associations.

CAPE COLONY.

A New Honey-Plant.—In Cape Colony, Africa, grow about sixty different species of *Portea*. Some of them give honey, the most from *Portea mellifera*, by the natives called zuykerbosches, zuykerboom, or tulpboom. It has so great a quantity of nectar that the same is gathered and evaporated to a syrup, which is sold and used as medicine by the natives. This syrup has a flavour similar to bananas. The plant blossoms in the fall, and the flowers are half full of this nectar. I think it would be very desirable to get this plant from Cape Colony, and to try its cultivation in the United States.—L. Stachelhausen, *Texas.—American Gleanings.*

The Cottager's (British) Bee Journal.—The publishers of the weekly *British Bee Journal*, in view of the fact that the price of the weekly at 10*s.* 10*d.* is beyond the reach of the poorer classes, decided to issue the *British Bee-Keeper's Adviser, and Cottage Bee-keeper*. This is issued concurrently with the weekly, once a-month. The price is 1*s.* 6*d.* a-year. The first copy is now before us, and we feel quite sure that it will meet the expectations of the publishers. It has for its editor none other than our good friend Thomas William Cowan.—*American Gleanings.*

The Death of Mrs. Tupper.—We note by the *Prairie Farmer*, that Mrs. Ellen S. Tupper, well known to our older readers, died suddenly, March 12, at El Paso, Texas, while she was visiting her daughter. At one time Mrs. Tupper was considered not only a standard authority on almost all questions pertaining to bee-culture, but she was also remarkably successful as a honey-producer. She finally went into the supply business in company with a Mrs. Savery, under the name of the Italian Bee Company, at Des Moines, Ia.; but in consequence of financial troubles and overwork it is said she became partially deranged, since which time we have heard little or nothing from her.

An Example from Ireland — Will Others do Likewise?—If you send me a few copies of the *Bee-keepers' Adviser* I will send it to any of my neighbours who keep bees. There are very few bar-frame hives in this part of the country, nearly all straw skeps. I get the *Bee Journal*, and when I read it I send it round to all my neighbours who keep bees. I wish the *Adviser* every success.—W. J. Anderson, *Ards, Caledon, Co. Tyrone, Ireland.*

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

BRITISH AND AMERICAN JOURNALS.—FOUNDATION FASTENERS.

[1590.] The visits of your *Journal* are as regular as they are welcome. It is read by some of us with an interest greatly enhanced because of our good fortune in having made the acquaintance of many of the leading contributors to its columns. To know the Editor, to have met with the gentleman who week after week gives us so many 'Useful Hints,' to have conversed with such men as Mr. Grimshaw, Mr. Hooker, 'Amateur Expert,' and a host of others, is to appreciate the regular visitations of the *Journal* to which they are frequent contributors.

The British bee-keepers are privileged above their fellows on this side the Atlantic in having a journal published exclusively in their interest, that is, the mouthpiece of no man in particular, nor the medium through which he trumpets the merits of the goods he has to sell. In this the *B. B. J.* differs from every bee paper published in either Canada or the United States with which I am acquainted. The publisher of every one of them has a direct interest in the manufacture and sale of bee-keepers' supplies. This may be a necessity to their existence, but it has its objectionable features. It fosters narrowness and jealousy among the rival claimants for public patronage, which frequently show themselves in the columns of their respective papers, and are sometimes manifested by the absence of information which their subscribers have a right to expect and ought to insist upon getting. I am reminded of this by the perusal in your last issue over the signature of 'R. F. Holtermann, Brantford, Canada.' The subject of Mr. H.'s letter is Mr. Eden's foundation-fastener, and appears to be called forth by a paragraph in 'Useful Hints,' published in your issue of January 5. It appears Mr. Eden contributed something on the subject of foundation fastening in the *American Bee Journal*, which referred to his own device. In referring to this Mr. Holtermann says, 'It might be interesting to know that Mr. Eden was simply working in an advertisement for his own ingenuity, and to draw attention to the subject so that it might pave the way for the fruits of his own thoughts.' All your readers have gathered from Mr. Holtermann respecting Mr. Eden's machine is found in its last sentence, where he says, 'An important feature in the machine here is an iron plate heated by a lamp. Upon this plate the edge of the wax is melted. It works well and rapidly.' I am no apologist for Mr. Eden if he has attempted to secure a free advertisement for his machine by instituting comparisons between it and others in an ordinary communication. His machine possesses merits superior to anything of the kind brought out in this country, and if he wants to make money out of it he ought to advertise it in the usual way. The strangest feature about the matter is that Mr. Eden exhibited his machine at the annual meeting of the Ontario Bee-keepers' Association held at Woodstock last January, and showed it working to the great satisfaction of every one who witnessed the work; and, although both our bee papers had a representative present at that meeting, who saw the machine in operation, yet neither of them has

condescended from that day to this to tell their readers that such a man as Eden exists, or that a foundation fastener has been invented by him which does the work 'rapidly and well.'

What would the readers of the *B.B.J.* think if they knew that something for which they had long looked—something calculated to lessen their labour, and make a perfect job when but an imperfect one could be made by appliances hitherto available—had been invented and exhibited at one of your Board meetings, and the Editor omitted to tell them of it? What excuse would the *Journal* offer if its Editor conveyed the information to the people of another country, and concealed from the readers of his own *Journal* the fact that a long-looked-for want had been met by a machine which did its work 'rapidly and well?' I fancy I hear you say, 'The Editor of the *B.B.J.* would be guilty of no such dereliction of duty,' yet such is the position Mr. Holterman occupies. He is the Editor of the *Canadian Honey Producer*, that carries on its title-page the following motto: 'Published in the interest of the Honey-producer exclusively.' But, then, Mr. H. is connected with a firm that deals in supplies, and so is the Editor of the other *Journal*, and this may 'account for the milk in the cocoanut.' Possibly they think they have a right to remain silent on all inventions, however useful, unless they control their sale. We have now two of the best section foundation fasteners in America. Of Mr. Alpaugh's you already know something. After seeing Mr. Eden's working, I ordered one of them, but it is not yet forwarded, so that I shall not attempt a detailed description of it. Suffice it to say that I think it is about as complete as it is possible for a machine of the kind to be made. It works not only 'rapidly and well,' but it does its work neatly, truly, and strongly. Unlike Mr. Alpaugh's, it works on both four-piece and one-piece sections, either closed or unclosed. What more can be desired in a machine of the kind? But there is a serious drawback to the general introduction of both machines. The price is too high. It is not every bee-keeper who can afford to pay five dollars, *l.*, for a foundation-fastener, however perfect it may be.

I am pleased to learn that your Mr. Lee is working along the same lines. His inventive genius, I doubt not, will enable him to give to the British bee-keepers what Messrs. Alpaugh and Eden have produced for us. If he succeeds in producing a machine that will do the work of fastening foundation in brood frames, he will have accomplished that which is 'devoutly to be wished,' and that for which his brother bee-keepers will owe him a debt of gratitude.—R. McKnight, *Owen Sound, Ontario, March 15th.*

WIRING COMBS IN SHALLOW FRAMES.

[1591.] In reply to your correspondent 'J. S. W.' who, on p. 196 of last issue of *Bee Journal*, asks if 'I find it necessary, or best, to wire my 6-in. extracting frames to prevent damage in the extractor,' let me say:—There is not the least necessity for wiring combs in shallow frames such as I use. I extract some hundreds of these combs annually, never have a breakdown, and have never wired a sheet of foundation in my life. When combs are built in shallow frames over the brood nest, the bees nearly always attach the comb to the frame along the full length of bottom bar as well as the sides, and when built thus—as 90 per cent of such combs will be—no breakage can occur, seeing that the face of comb lies close on wire of the cage, and the strain is equal over its whole surface. The sectional boxes I use are 6 in. deep, and the frames 5½ by 14, not 6 in. as stated by your correspondent. It is important to bear these measurements in mind, because I frequently use two of the boxes as a brood-chamber, so that with eighteen frames 14 by 5½ we have a larger breeding surface than ten standard size combs give, and any addition to its capacity is, on this account, objectionable.

At the present time, when shallow frames are meeting with such general approval for surplus chambers, it is quite a misfortune to find differences in dimensions creeping into use. I have used these frames successfully for the past thirteen or fourteen years, and would express an earnest hope that our hive-manufacturers will adopt the 14 by 5½ as a standard size, in such hives as they turn out with frames for surplus chambers. It is the best size in every respect for extracting purposes.

The esteemed writer of 'Useful Hints' also refers to these frames on p. 187 of your last number, and, while approving of their use, says:—'We would, however, make one addition, viz., that a zinc-excluding adapting board be used between hive and surplus chamber.' In the concluding portion of my article in *Record*, to which reference is made, these words occur:—'Queens should be rigorously confined to their own department, and never be permitted to enter surplus chambers. Excluder zinc accomplishes this (for us) without failure, and a supply of the article is an indispensable item of our working plant.' It will thus be seen that I am entirely in accord with Mr. U. H. on this point, though he has apparently overlooked my words as quoted.—W. Broughton Carr, *Higher Bebington, Cheshire.*

IN-AND-IN BREEDING.

[1592.] I read your leading article in last week's issue with considerable pleasure, which was, I confess, much enhanced by finding we were so nearly agreed on all the chief features in this discussion. It, however, seemed to me that you must have somehow overlooked Mr. Webster's second article, which was the one to which I took exception. There are a few minor points, too, requiring a little more elucidation; and, lastly, as you state that I have misunderstood the question at issue, I beg you will allow me to say a few more words, as I am most anxious to put myself right with your readers, amongst some of whom I fear your article may create the impression that I am against the introduction of fresh blood into our apiaries.

To begin, let me say that I had no general objection to Mr. Webster's first article, page 62, only that I did not accept his examples of degeneration brought about by supposed isolation and in-and-in breeding, which he gave in support of his case. However, I allowed that to go by unchallenged. It was to his second communication that I so strongly demurred, and must ask your readers to judge whether I was right in supposing Mr. Webster's article was intended to favour the importation of foreign bees as a cross with our native ones or not. I quote from his letter, page 131: 'Would our cows, our sheep, our fowls, *our bees*, our trees, bushes, and plants, produce what they do if they had been allowed to revel in a state of nature?' 'Has no foreign variety of tree or plant been imported to improve and has improved our own?' &c. 'How have our fancy pigeons been produced? How our useful or pretty dogs, *cats*, rabbits? Why, each and all of these have been produced by a judicious crossing of varieties—in every case of *foreign* varieties.' 'Why, then, should not we do the same with our bees?' Now, with regard to the above quotations from Mr. W.'s article, I can only say that I very much regret he did not confine himself to bees and bee-keeping instead of wandering into the wide regions of biology, for there is not the slightest analogy betwixt man's selection or crossing animals and plants with a definite object in view and natural selection or the crossing of animals and plants naturally, which with bees we cannot at present prevent.

So far as his article relates to the infusion of fresh blood into our apiaries, I am fully in accord with him; it is only to a cross of *foreign* blood that I object,

because I don't believe the foreign bees are a superior race to our own, nor is it likely they will withstand our fickle climate nearly so well.

After this little digression, perhaps you will allow me to return to your article.

You state, 'Our native bees can be used for cross-fertilisation to any extent without the necessity of importing a single foreign bee.' This is just my own argument, and so far from my being opposed to a cross, I stated that I was not against it 'if such could be got from a bee in all points better than our own,' but that I was 'against crossing with any degenerate race the foreigners chose to send us.' Also (page 158), 'I have driven bees thirty miles away, on purpose to get a cross.' But you see I am for crossing with a *better* bee, just in the same way as our raisers of stock, fruits, flowers, &c., set up an ideal of perfection in their minds, and carefully breed and select from those which most nearly approach it, until eventually they attain their object; and I would in the same way wish bee-keepers to improve their bees, but it, unfortunately, cannot be done—not until we have a certain method of mating them, and until we get that for which we are groping in the dark.

What the advocates for the introduction of foreign bees contend for is simply a cross, with a bee whose characteristics in its native land they know nothing about; and when such cross is obtained, what then? No matter what new feature it presents, whether good or bad, they they cannot be perpetuated or eliminated until we discover a sure way of controlling the mating of queen and drone. Therefore, the only advantage, if any, that can be claimed for crossing with foreign bees is, that there is an infusion of fresh blood, although that blood may be from a very inferior stock to our own; whilst I contend we can get an infusion of fresh blood from widely different districts in our own country, with the advantage of knowing their good qualities, and avoiding the spread of disease.

You state, sir, 'that a good all-round bee might be produced from an admixture of Ligurian, Carniolan, Cyprian, and English blood.' Quite possible. I do not doubt it, but it would possess traits of character either for viciousness, or what not, which might take years to eradicate. Besides, have we not a good bee in our natives, both for hardiness, for temper, and for honey-gathering, which will put into the shade all the foreign bees, either pure or crossed? Let the advocates of foreign bees give their best results, Mr. Editor, and I will give mine.

You state, 'It is too late in the day to doubt the firmness of the ground on which Mr. Webster's articles are based, now that we obtain "honey by the hundred-weight" from bees, which, according to excellent authorities, have ceased any longer to be the old English or German brown bee, by reason of the numerous importations from abroad.' Surely, such a contention as this ill becomes the Editor of the *Bee Journal*. Are you, sir, going to ignore the benefits derived from keeping bees on modern principles, and ascribe all the benefit to a haphazard cross of foreign blood? Surely not.

I have much more to say, but I dare not; I fear I have already trespassed beyond ordinary limits, but cannot close without expressing a hope that your remarks on breeding stock, and what is and what is not consanguinity, are not intended for me. I had hoped I had passed that elementary stage some twenty odd years ago.—F. Boyes.

CONSANGUINITY.

[1593.] Under the above heading, page 101 (1498), a case is brought up of bees being 'nearly two miles in a bee-line' distant from others, and swarming 'say a fortnight earlier than any other neighbours' bees,' these circumstances being considered sufficient proof that this must have been a case of in-and-in breeding. I should very seriously doubt—in fact, feel positive that this cannot be considered such a case. I know positively by island experiments on Georgian Bay that the queen may meet the drone five miles from the hive. Then as to their early swarming, this would not be sufficient proof that matured drones might not exist in other hives, and your bees and honey seasons must be very unlike ours if they did not have later swarms.

I can say nothing very positively as to the evil or good effects of in-and-in breeding; if not evil, why has their Creator ordained it that the queen should be impregnated on the wing? Then may we not make a mistake by in-and-in breeding, whilst we have few strains of bees as yet which have reached that state that we cannot improve them by judicious crossing?—R. F. Holtermann, *Brantford, Canada.*

CONSANGUINITY.

[1594.] In returning to this subject again, I trust I shall not be accused of *cacoethes scribendi* if I add a short *résumé* to what I have written before in previous letters. Our worthy Editor, having endeavoured in last week's issue to place the salient facts before the readers of the *B. B. J.* in the editorial (page 175), has taken a short excerpt from one of my letters, and italicised the salient point, or the offending words; whereas in Mr. Webster's case he gives a paragraph with the gist of his article, which I do not consider fair. Taking my previous letters as a whole, I have nothing to retract; probably, if I had more time to spare for ink-slinging, I might often word some of my paragraphs differently, but under existing circumstances I have to send off my communications as first written.

Now, my contention is, and has been—*vide* my previous letters—that when a recognised writer on bee matters like Mr. Webster makes a statement, and then backs that statement with examples, the inexperienced novice in bee-keeping would accept his deductions without the customary *granum salis*, and believe it as an established axiom or dogma. Though I am bound to admit that Mr. Webster, like some 'Old Parliamentary Boys' once limned in *Punch* as running away after they had chalked up on a notice-board, 'No Popery!' he too had to recede from the position he had taken up in his article, and the examples he recorded, and admit the remote possibility of the consequences he predicted ever being realised. If Mr. Webster had not appended the two examples of the old woman's apiary in the 'Lone Valley' and the one in the Pine Woods as instances coming under his own actual notice, I should not have replied to his article, but with such positive instances of alleged deterioration incident on in-and-in breeding, I felt it a duty to bee-keepers generally, and the new converts to the modern system especially, to publish two (among many similar) instances that have come under my own notice, diametrically opposed to Mr. Webster's ideas—instances of continued and continuing prosperity in equally isolated apiaries to those mentioned by him. Yet Mr. Webster's ideas are lauded to the skies as axiomatical dogmas, while my instances (tangible, truthful ones though they be) are relegated—with the words I used to emphasise the actual fact—to the cold shades of pity, evidently because they happen to prove the futility of Mr. W.'s examples and the very antithesis of his deductions.

The instance I mentioned of the same strain of bees being in the possession of grandfather, father, and son, was not in a lone valley but on a hill-side, and they must have gone forth and multiplied abundantly year after year for many years,—though I do not remember stating it to be 150, but in the matter of prolificness of the strain of bees mentioned by me I would like to mention the cottager obtains his harvest of honey by the brimstone pit, which is a salient reason why the said bees

had not peopled the hill-side, aye and the valleys beyond. Then as to the amount of 6*l.* cash and twenty gallons of mead, which, at a low estimate would be worth 1*l.* more, making 7*l.*, as the profit in five stocks. I opine there are many bee-keepers who have the best and latest improved appliances, coupled with the best advice the *B. B. J.* can give them, and who have invested in the finest selected strain of foreign bees, and yet fall short of that amount of profit when they tot up accounts at the end of the year. I mentioned the farmer's widow gave the old man the *second* swarm, at the sale of the farmer's effects, implying that the bees were sold with the other farm stock, which is the fact—but I do not assert that no bees were kept within a radius of eight miles of the apiary, evidently the district would have been full of the same strain of bees if the men had sold one swarm per year to their nearest neighbours, without any introduction of queens from other strains from a distance. Here we leave the matter with the eddying circles of dates and distances still enlarging, like the enlarging ripples produced by throwing a pebble in the centre of a placid pool of water. Mr. Webster fairly conjectured the time of three generations at ninety years, our Editor at 150, a wide difference between two authorities; and we find the radius enlarging also in which a strain of bees can be kept pure and immaculate. It seems like a waste of time to write on consanguineous subjects, nature appears too prodigal in our small island to allow of close in-and-in breeding if radii of eight miles are everywhere overlapping each other.

Then again as to obtaining honey by hundredweights with the mongrel strain of foreign bees, I, too, have accomplished the same results with my English strain; and if I was boastful I have no doubt that both my average and profit on (say) fifty to seventy stocks, would compare favourably with any like number of stocks in any apiary in England, be they Carniolan, Ligurian, Cyprian, or the Holy Land bee, or a hybridised mixture of all and sundry. I can also say, Mr. Editor, I have stolen a march on you while your hybridised strain enables you to write of hundredweights, I am able to write of honey by the ton, and all gathered by the English strain of (not immaculate) bees and equal in my estimation in every point to any race of bees existent in Great Britain to-day. I am sorry I was not more lucid or explicit in a previous letter *re* the grafting and budding, so that Mr. Webster may have grasped my meaning when I mentioned the 'amber heart cherry' and pippin apple as instances and kinds it would be impossible to produce from the wild cherry and crab-apple by cultivation, and Mr. Webster's antistrophe was misapplied to me, for though I do not sit under my own vine and fig-tree I gather fruit yearly from trees grafted by myself, proving I am quite conversant with both budding and grafting.

When may bees be said to be wild? when a stray swarm locates itself in some hollow tree, or are there some strains of wild bees existent in England that refuse to be domesticated, *i. e.*, to dwell in hives: if so, where or in what part of the kingdom are they to be found? If our Editor is referring to a stray swarm located in some tower or roof, that took themselves to flight from (say) my apiary two or three years ago, I fail to see the advantage accruing to my bees inter-breeding with these bees beyond the occupants of hives still remaining in the apiary.—W. Woodley.

[According to statisticians, the average duration of a generation is thirty years, but in an ordinarily healthy family 150 years is not an uncommon duration for three generations. Sometimes these extend to 200 years, and even beyond that term. William Penn, the founder of Pennsylvania, was born in 1644; his grandson, Granville Penn, died at Stoke Pogis, near Windsor, in 1844. —Ed.]

BIRDS AND FRUIT-BUDS.

[1595.] We are not much troubled with the bull-finches here, the bird-catchers are always on the look-out for them; but we have a curse nearly as great in the sparrows, which swarm everywhere, to the great injury of all fruit-growers. When snow is on the ground they attack the gooseberry, red currant, and plum-trees, pecking out the blossom-buds for the sake of the small quantity of saccharine matter which they contain, and which would develop, if unmolested, into the future honey for our bees. Not only do they do this, but as soon as the gooseberry-trees come into *flower* they cut off the flowers and incipient fruits wholesale. I believe an old cock sparrow will destroy at the rate of nearly a stone of gooseberries per hour if undisturbed. Any one can see the destruction they cause by this means if they will only take the trouble to lift up the branches, when they will see all along the bearing shoots—especially such as are horizontal, and on which the birds can easily perch—the flower-stalks, or, perhaps, half of the young fruits, remaining, the other portion having been cut off and the sweet part eaten.

I am glad to see Mr. Hiam call attention to this, as, of course, if we allow the birds to peck out the blossom-buds, we cannot expect to have the blossoms for our bees.

Sparrows, I find, take my bees, too, worst of any birds we have, except the great tits (*P. major*). They also destroy the crocuses, and do other mischief,—'drat 'em!'—F. Boyes.

REMINISCENCES.

[1596.] Reading the pages of our *Journal* the other night I determined to write an account of most of my misfortunes—all I can remember—and mismanagement of the honey bee, also known as the sting bee. My readers will kindly remember that I was very young to start bee-keeping, and knew no one to whom I could appeal in case of any mishaps; and I did have several, as you shall hear.

It was about the year 1875 we lived, and had been living for several years, in a beautiful valley about ten miles from Birmingham. There was not a fence, tree, hedge, or bush, that was unclimbable, as the birds knew full well. My brother Harry and I went to the rock-shop and to school at the nearest village, three miles off, or rather town, as the inhabitants proudly called it. When we were not there we were either up some tree, or roaming about the fields and woods in quest of another egg to add to our collection, which was a very good one. According to the report of one who should know I was a fair sample of a boy; but judging by a peculiar smile which followed after that saying, I should infer that a great deal is meant by that, and I say at once to anyone who has read *Sandford and Merton* that I was a wicked boy indeed.

Now I have described myself let me describe our hive, which contained the first bees I ever remember. It was a large, box hive, and at one corner the bees used to hang out in a cluster every summer, while we, at the risk of a dumpling eye, used to pick off with great skill the straggling bees with a catapult, and wonder vainly what it was like inside. Every autumn on the path beneath we found some morning that it had been raining drones in the night; never since have I seen so many turned out of one hive. Our interest increased with our years in those bees, and much more so when my father conceived the noble idea of fixing a straw hive against the wall for them to swarm into. Our old friend the gardener was told off to perform this feat. He bought one of the smallest hives I ever saw, which he made very sticky inside with beer and sugar, and, as a further inducement (?) constructed a network of sticks

inside 'for the bees to lodge on.' It was then placed on two iron supports some two yards from the bee box. Total abstinence principles were at once forgotten, and I regret to say many bees were soon wandering about on the path thirty feet below, trying in vain to find the entrance of their home. I fancy those bees had many a laugh over that straw skep, but it was destined to become very useful in twelve months' time; for one lovely evening, as my brother and I were out gathering clover for our rabbits, we came across a large swarm, bending to the ground a stout hazel bough. Our hearts beat wildly with fear, hope, and joy. Being dusk, at first we were in doubt whether it was not a swarm of flies or wasps, but at last decided it must be bees. So, while Harry kept watch, I fled for the gardener, and finding him managed to stammer out enough for him to understand what was wanted. The hive that had kept such a long, faithful watch was brought to earth, and after some little delay in putting in a fresh supply of stickiness to gum their wings for a space to stop them from flying and throwing their stings away, we started with the hive, a table, a cloth, and various feelings, in which fear predominated, to hive our first swarm. We arrived and watched the busy insects for several minutes, during which time my knees knocked together more than I would own afterwards. We prepared for action; Bunn, the gardener, held the hive under them, Harry was to hit the bough sharply (it was getting dark), and I held the cloth ready. Everything was now ready, the signal was given, a very weak tap broke the stillness of the bees and of the evening, half the bees fell into the skep, the bough released of most of the weight, like a piece of elastic, shot at Mr. Bunn, who caught a great many of the bees with his coat and hair, and who called the bees, bough, and Harry, several naughty words for some moments afterwards.

When we had got our breath and our instructions afresh, the hive was again placed beneath the remaining bees, and Harry, now more used to it, knocked every bee off at one try. The hive was nearly full of bees, and so was the grass round about. Singularly, not a bee lifted his stiug against us; whether it was the sugar and beer that made them so tame, or the trembling of the hive confused them, or maybe the funny old face of Bunn peering down upon them, inspired confidence and implied that all would be well, I know not; but I know we were glad to get them on the table and covered with the cloth, and then, after 'flicking' all the bees we could find on Bunn—some scores—off him, we carried them home in triumph, leaving thousands behind to their fate, and, luckily for us, to mourn the loss of their 'leader.'

The hive was placed in the garden, and next morning, some hours after the bees had started work and well marked their position, we put up a stand the other side of the garden, and got the hive on it and a milk basin to cover all. There they worked splendidly, and were soon clustering outside for want of room. But even now we were not content. It was tantalising to think of all the wonders going on beneath one inch of straw and nothing to be seen. But a bright idea struck us, which was to cut a hole in the crown and put a piece of glass over it. This we did, and were delighted with the extensive view of comb obtained. We now would gaze by the half-hour at about seven cells, and as many bees, who were not in the least afraid of us, but by their expression seemed to say, 'Our time is not yet come to make you run.' Strange as it may appear at first sight, that hive was the innocent cause of many a terrific fight between Harry and me, during one of which our collection of birds'-eggs, the result of many a hard climb, was knocked over and smashed. The necessity for this warfare was, that I contended we ought to go shares in that swarm, having both clapt eyes on it at the same moment, but my brother, in virtue of being older than I (some sixteen months), claimed it as his. After awhile, being unable to decide by force, I tried persuasion, which was successful, for he promised to make an artificial swarm and let me have it. We learnt by heart the instructions contained in a book by the Rev. J. G. Wood, which happily my father had bought. Then being quite prepared with veil and gloves, &c., and having chosen a dark night so that the bees could not see to sting—we found afterwards that they can feel to sting quite well enough for all practical purposes—about ten o'clock we went to work. With fear and trembling we approached the hive, and having blown in a little smoke and a great many sparks from a piece of rolled-up rag, we turned the hive over, and immediately put an empty one over it, wrapping a towel round the junction. Now we know bees are wonderfully knowing creatures, and I firmly believe they took advantage of our youth, for we could not get them to run up. It may have been because we gave a few taps and then ran off to extract the stings (there was a leak in that towel) and then back again to give a few more, only again to bolt, so giving the bees thinking time. Enough to say we never got that swarm. True there were some hundreds of bees and drones in the upper hive, which were put on a new stand, but they returned next day to the mother bee. Well, I was not going to be outdone by such a small insect, so I drew out of a secret recess one pound, the result of much self-denial, and straightway went to a bee-keeper, six miles off, and bought with the money a very weak stock. It survived the winter, and in the spring by feeding at the entrance every night with syrup in a spoon, I got them very strong.

About this time I came across the picture of a bar-frame hive, and was so struck with its advantages that I at once went to some expense to get a very wide piece of wood to make one. I thought it must be a good depth, so secured a piece one inch thick and sixteen inches wide, then made a box with a groove at the top for the ends of the frames; these latter were 15½ in. depth and 10 inches wide. When it was made I thought about it all day long, dreamt of it at night, and even in church my thoughts *would* wander to it. I pictured myself taking out the frames, watching the queen egg-laying, and all sorts of things. How many times I took the frames I cannot say; but by the way, I could not get the frames to hang true; but it did not matter, because that hive was destined never to see a bee inside it, the only wonder is I did not break it up for fire-wood. Why? Because I came upon a book by A. Pettigrew. I read it once, I read it twice, in fact I read it until it was imprinted deeply in my memory. I made all haste to increase my stock; three swarms were bought at different times, two were off an old man, who had more than twenty rotten old skeps, on stands at such an angle that anything else would have rolled off them. Three long weary miles I had to carry them. The other one was from a cottager who had hived them four days before I got there, of course all the combs broke down and killed a lot of bees, but fortunately not the queen: they afterwards got very strong.

In the meantime Harry had taken a very nice super of honey and drone-brood off his hive; so, to be equal with him, I determined to drive a stock and take the honey. Having selected a very dark night. I did my best to get them out, but did not succeed; they forced me to retreat, for they had found a breach in my veil, and formed into a false swarm on my throat. I brought away a lot of stings as a trophy, and my relatives spent some time in collecting them. When this was done, they used the greater portion of a blue rag, part of a bottle of ammonia, and several onions, which were very successful, for the stings had little or no effect on me at all, although as a rule one is enough to close both eyes.

I have driven scores of hives since then, but *never* again at night. Well, seeing that was a failure, I next sent them to sleep with smoke, while I appropriated the

side combs of honey; but I evidently did not give them enough, for they came *very* much awake before I had finished, and stored their stings away in me right and left. The next day there was a great commotion amongst those bees, for all the hives in the neighbourhood were kindly helping them to clear the honey up, and they did it fairly well, for no honey or bees were left in the hive by the next evening. But before this I had tried Nutt's Collateral system: on both sides of a strong stock an empty skep was placed, connected with the stock by a wooden tunnel; it was rather exciting work cutting the side holes, and in the end we suffered for nothing, as they never took to them.

Some time before this Harry was seized with a splendid idea, which was to take the honey out of the box hive. He mounted a ladder, drove all before him with burning sulphur, and took out all the honey he could reach, which was about twenty pounds, then nailed it up again; and there those bees are to this day, I believe. His old hive gradually got weaker, and at last died out; and, luckily for me, his interest in bees died out with it. But my chapter of accidents is not finished yet. That same summer, one June morning, I hived a cast, covered it up, and some weeks after left home for a month. Coming back one hot day in August, of course I was anxious to see how they had fared, so I turned the hive up, and was pleased to find it full of comb and very heavy. I turned it over to replace it, when out fell the bees and combs in a soft mass, something like currant pudding; here was another hive killed. I began to doubt the saying that bees were so profitable.' I stood afar off behind a hedge and watched them; if any one had passed by wanting bees I should have sold at an enormous sacrifice. At this time my advice to the poor clergy would have been—'Don't keep bees! Don't keep bees!!' I went about with a dejected countenance, and sitting on the grindstone handle wept aloud as I thought what a 'delusion and a snare' bee-culture was. But there was a fascination about it I could not withstand—yes, before long, I began to look forward to another year! Little did I think how different it was to be for me and the bees, for that same autumn my uncle, a well-known and successful bee-master, hearing of my troubles, sent for me, and from that time my trials were all over. Thirty stocks were at my service to practise on, sections and scores of other things to be examined, also a large exhibit to get up and mind at the show. There I pored over, read, and re-read several volumes of this most interesting *Journal*, besides several books on the same subject. There I met that great man, Mr. A. Pettigrew, whose book at one time gave me such pleasure and caused me no end of stings. He lived just by, and was rather 'put out,' I thought, because my uncle had joined the 'new-fangled' party, for Mr. Pettigrew had started my uncle with the barn hives.

But this pleasant time came to an end at last. With my pockets full of sketches of all kinds of appliances, and with a bar-frame hive, which my uncle had very kindly given me, in the luggage van, I hied back home a happier boy. That winter I made several hives, section crates, and a lot of other things. I carried an almanac about with me, and struck out each day as they came. The time went very slowly, but May came at last, when I transferred most successfully all my bees into the bar-frame hives.

After awhile I took nearly a dozen sections, as well as extracted every bit of honey they had, and fed them up with syrup. Driven bees were added, and several new stocks made; and every year since I have been more and more successful; my take of honey increases, and my customers take it all. Lastly, every one is much interested and astonished at my annual exhibit of honey and appliances at our village flower show—not the village, I regret to say, we used to live near, but one not two miles from Birmingham, so that I am unable to astonish the readers of the *Journal* by any great take from one hive. My best stock in 1886 yielded sixty-two pounds, and in 1887 fifty-six.

Perhaps later on I may give an account of my success, but I hope even the foregoing lines, faithfully recording my adventures with the honey-bee, will be enough to save some from giving up in despair, and others from doing things that ought to be left undone. By joining the Warwickshire Association, I now write five letters behind my name; the cost is only one shilling each letter, not taking into account the other advantages. Let every bee-keeper take in the *British Bee Journal*, it is generally most amusing and always interesting; and in conclusion, I say, follow the French bishop's advice to his poor clergy—'Keep bees! Keep bees!!'—Lordswood, M.W.B.K.A.

WAR! PESTILENCE!! FAMINE!!!
A CHAPTER OF FAILURES.

War.

[1597.] 'Please will you come to look to my bees?' Being district adviser, this was part of my duties, so I went; and before I tell you what I found, I will tell you the history of the stock under consideration.

Last autumn the bees were given to the party that addressed me as above on conditions that he 'took them up.' Consequently, he borrowed a neighbour's horse and spring cart, drove five and a half miles, gave them the necessary amount of 'bumping' and driving, packed the bees into three empty straw skeps and returned home. The road was the usual parish lane in a country where flints abound, consequently the bees had a fair amount of jolting, and arrived home looking pretty black, with a large amount of them dead through over-gorging and suffocation. The best queen was selected, and the hive bees placed with her, and crammed on seven bars well supplied with sealed food.

My experience of driven bees when united at home in this way is, that they invariably 'ball' the queen given them, but if united on the spot, they accept the one given them without question. Whether this was so in this case, I am unable to certify; certainly she was alive later on when I helped pack them up for winter, and she had bred a goodly number of young bees. But I noticed what I never care to see under such circumstances—a few queen-cups, or undeveloped queen-cells.

Spring came, and the owner, to be on the safe side, gently fed them a little syrup, and then the war commenced! He had no opportunity of seeing them during the day, but being suspicious, he called on me for advice. 'The wife says this hive and the next to it are always busy when others scarce work at all.' Examination told me that evidently early in spring this queen had succumbed to stimulation for breeding. Robbing had ensued, a gentle resistance at first, eventual surrender, and take common cause with the assailants and accept the 'fortune of war.'

Query.—Are driven bees when carried long distances and submitted to excessive nervous (?) exhaustion worth the candle?

Pestilence.

This was an application for advice from another party. Not a labourer, as in the last case, but a professional man. He had kept bees for years, and one year got twenty-five well-filled sections from one hive, but only once, and then only from one hive. He is a good sort of fellow, he has a try at everything, and is good at nothing but his profession. Carpentry! His greatest achievements are done in putty, certainly not in wood. Painting! If you saw his work you would imagine he laid it on with a trowel. Gardening! He has a greenhouse, but he always has to buy his bedding-out plants, because the

heating apparatus that he fixed himself never will work. Poultry! He buys sittings of the most famous breeds, and you should see his fowls penned up! You would imagine his last investment was in those famous American patent eggs, which not only could not be distinguished from hen's eggs when cooked, but would hatch out chicken, only they had the serious fault that they are always featherless.

It will not be difficult for you to believe that his bees were no exception from his general lack of thoroughness. When I first knew him, he owned half-a-dozen stocks; by degrees they dwindled down to one. For the past three years he has done his best to keep them alive; he has united 'driven' bees to them each autumn, each spring he has given them a good cake of candy. Yearly have the snows and rains of winter soddened the hive and the winds of spring blow through them. The quilts are well daubed in propolis in patches—happy hunting-ground for wax-moths. The dummies never did fit, and a handful of miscellaneous pieces of rags does yearly the duty for winter packing.

This spring has seen the end of the 'one ewe-lamb.' Mildew, dysentery, and the webs and grubs of the wax-moth, have done their work. Our friend—a fair representative of a large class of subscribers to our county Associations—is no longer a bee-keeper. His pets have succumbed to Pestilence!

FAMINE.

'Well, "A. E.," you are fast in talking about others. Do you never get a failure?' Come home with me into my garden, I will tell you one or two little tales. You see the hive at each end of the row; each of them contains a home-bred Carniolan queen, the gift of my friend John Walton of Leamington. He was good enough to give me two last July. How blithely I introduced them *à la Simmins*. I had recommended it to others, having always been successful since I followed the half-hour starvation plan. But you should have seen my look of mingled astonishment and disgust when I found one was dead and the other 'balled' beyond all hopes of recovery. Friend Walton doubled his gift by sending me two more, which I caged, and succeeded in getting them accepted all right.

That is confession of failure number one, but I have not done yet. I was especially careful to give these two hives ample sealed frames of food, so that nothing should prevent them from doing well. I packed them up snugly for winter, promising to work them on the 'let-'em-alone' principle in spring. During their winter flights, I noticed a good sprinkling of Carniolan blood, more in one hive than the other. The other stocks I looked too and fed where necessary, but comforted myself that these two 'Waltons' were all right. A few days since I noticed a few bees crawling out of one of them. This alarmed me. Bees were flying around the entrance also. I found on examination that the hive was one mass of crawling, helpless bees. I did not remove the frames, nor break up the cluster, but I put three fire-bricks in the kitchen oven, and proceeded to warm a pint of syrup. About a gill of the syrup I gently poured down between the combs, one hot brick I placed outside the dummy in the place of the cork-dust cushion, and two bricks I put on the top of the quilt over the frames, placing three more bricks in the oven. When the first set of brieks were cooled down, I replaced them with hot ones, and placed a feeder full of warm syrup in position. It was 7 p.m., but they soon began to 'hum,' food and heat were doing their work. At 8.30 p.m. I placed on the last set of bricks for the night, amidst the inquiry as to whether the bees 'had caught cold and wanted hot brieks to their feet and chest. Would a linseed or mustard plaster be of service?'

Next morning I found quite a pint of dead bees, a disposition to rob on the part of the neighbouring hive, and to ball the Carniolan queen on the part of her famine-stricken subjects. They will pull through with care, and will be united to the first swarm I get. But a few hours more, and I should have to record a loss on the score of Famine!—AMATEUR EXPERT.

PORCHES.

[1598.] I beg to thank 'Yorkshire Novice' for his hints. I have already tried what he recommends, but the result of the experiment did not give me satisfaction. I tried porches 21 in. by 4½ in. and placed 4 in. above the entrance. The first improvement I made upon the porch was to deprive it of its roof. The next improvement was the removal of its sides. My experience is that porches give shade just when it is not required. They retard the bees in getting to work in the morning; they are the homes of spiders and other insects. The fewer angles about a hive the better.

In very exposed positions side protection would be of advantage. I have two alighting-boards hinged on to the floor-boards, but I prefer them disconnected, although they serve as partial shades from the snow. If the alighting-board is 6 in. from the hive it acts well as a snow-shade; in my case it is too near the hive; the sun's heat passes on to the hive. A perfect snow-shade would be a piece of wood, say 2 ft. square, with two iron spikes attached to it to fix it in the ground, and placed one foot from the hive. The air in front of the hive would in this case be kept at such a temperature as to prevent the bees flying.

The expert of the Essex Bee Association paid me a visit yesterday. He examined four colonies; one he pronounced 'very good.' I mention this because they were wintered on twelve frames in a 6-inch hive with a 9-inch hive below. They have never been touched since September, beyond placing a cake of candy over them in January.—R. T. SHEA, *Little Wakering Vicarage, Rochford, Essex, April* 14.

BEES IN NORTH WALES.

[1599.] Seeing several accounts of different associations I thought I would like to give you a little account of the North Wales Association, which I am afraid is going to collapse. I have heard nothing of it for two years, for which I am very sorry indeed.

Having a few days' holiday during Easter week, I thought I would take a walk and see some of my brother bee-keepers. I made my little tour not three miles from my own home, and visited over thirty bee-keepers. I found many of them willing to join an association. Most of the stocks were in fair condition, with exception of a few that had died through the want of food.

Having six stocks myself I thought it was time for me to be looking at my pets. On Easter Monday, April 2. I found them in very fair condition, with the exception of one, and that was a hive I had robbed a great deal. I took eighty-two pounds of honey from it last season, it having swarmed on the 29th of May; I made an extraordinary swarm of it.

Having seen a great deal of talk about the Ligurian bees, I do not think they possess any advantage over the common English bee. One disadvantage they certainly possess is that a good swarm costs 2*l.* as against 15*s.* for a common one.

I hope that in the course of a few years the North Wales Association will be second to none in the country.

O Wales! why dost thou sleep?—J. D. W., *Wrexham.*

NOTES FROM MALTA.

[1600.] *April 12th.*—First natural swarm yesterday in almost a gale of wind, but hived successfully, to the great astonishment of the native gardeners, and this morning they filled six frames. Supers on four hives, and one

obliged to be tiered up, some of the sections being sealed over. I expect another swarm next week. Wax-moth pretty nearly defeated.—'MALTA.'

STINGS.

[1601.] I desire to put on record a few facts on this subject, drawn from my own experience while in the bee-business. I always worked with my bees bare-handed, merely guarding against bees passing up inside of my sleeve. In the course of a year I received many stings on my hands. When I began keeping bees I dreaded a sting very much. It was not only painful, but usually followed by swelling which often lasted over twenty-four hours. After a time I ceased to dread them, and noticed them as little as possible, and they seemed to be less painful, and scarcely ever caused swelling. If during the day I received a number of stings I would feel drowsy in the evening, and desired to retire early. At least, I imagined that my drowsiness was caused by the stings. I also thought severe stinging caused a burning, itching sensation in my eyelids, and it seemed to me that each year I could notice this soreness in my eyelids increasing.

Once a bee-sting made me sick and faint. I was stung in the small of my back, the bee stinging through my shirt. It caused me intense pain, and I grew sick and faint, and with difficulty reached the house. The day was sultry, and I was very warm at the time, and therefore I could not say how much of my illness was owing to the sting. After an hour's rest I felt all right. My wife often assisted me in my apiary, and frequently received stings with no serious inconvenience; but one day as she was busy about her housework a cross bee darted at her and stung her on the neck. She complained of intense pain, and soon became so ill that she had to lie down. Her whole body was somewhat affected, as a rash came out all over her body. Her sickness lasted probably six hours.

One day I was taking off combs to extract. My little daughter, then about twelve years old, was blowing the smoker for me. She was well protected, but in some way a bee crawled inside her hat and stung her, when she suddenly dropped the smoker and made tracks for the house. About half-an-hour later my wife called me to see the effects of the sting. She had been stung on the neck, which was somewhat swollen; but the most swelling was about her eyes, which were swollen so much she could scarcely see. She also seemed drowsy, and after a couple of hours' sleep seemed as well as usual, but her eyelids were still somewhat swollen at bedtime. She has had frequent stings since, but none produced anything like a similar effect.

I remember being in the house of a physician one evening when he returned from visiting his patients. He said he had been called into a house in the village to see a boy who had been stung by a bee, and was surprised to find him quite sick and his body covered with a rash as though he had scarlet fever. The boy's parents were alarmed, but the physician told them the lad would be all right by morning. My experience has led to the conclusion that the effects of bee-stings are not always the same. The anger of the bee, the amount of poison injected, the place stung, and the condition of the system, all have an effect. If a person is stung, and the sting proves troublesome, he need not infer that it will be always so, and thus be deterred from ever looking at a hive of bees. The effect of the next sting received may be quite different.—W. D. RALSTON (*American Gleanings.*)

VENTILATING HIVES DURING THE WINTER.

[1602.] Three winters ago I purchased a hive (wooden box) of bees from an apiarian, who was selling his stock pending his removal to a distant part of the country. On going to see the bees prior to purchasing I found all his boxes, eight in number, thoroughly ventilated, the doorway being left open to its full width, and a four-inch square opening in each crown-board, only covered by a piece of perforated zinc; the hives were in a small wooden bee-house open to the front. This starvation state of affairs of course elicited from me a few questions as to the cause of such apparent carelessness for his bees, when I was informed that such had been his practice for a number of years. Some years ago he had been in the habit of keeping his bees free from ventilation during the winter, but not unfrequently he had the mortification of losing his bees. As a last resource he seems to have adopted a directly opposite plan, by ventilating them in a manner above described, and, singularly enough, he never afterwards lost a hive.

Without, then, seeing the reasons for this success, the facts were too plain to admit of doubt; I therefore adopted his plan, and up to the present have been favoured with similar success. Many bee-keepers of the old style of skep without opening at the top (and there are a goodly array of them in this neighbourhood), have seen my hives, and their greatest cause of wonder seems to be that the bees are not perished. My experience so far indicates that bees kept in a comparatively dry atmosphere by thorough ventilation will come through the most severe winter in our climate in a better condition than when ventilation is prevented.

I may here say I think it is advisable to ventilate early in October, but not continue it longer than the middle of January or the commencement of February, although I have ventilated until the middle of March; and after this the hive so ventilated, without being fed, has sent out its first swarm only second in the neighbourhood, the first being thrown off only a day or two earlier from a stock which had been fed during the whole of the spring.

There is also another point worthy of notice—namely, when ventilated they require a considerably less quantity of food. As an illustration of this—I, and a friend near, at the beginning of last winter had each a hive very similarly situated in most respects, except that mine had only twelve pounds of honey as their winter stock, while his had upwards of twenty pounds. I ventilated mine in the manner before described; whilst my friend, I suppose out of kind consideration for his favourites, added a bell-glass over the perforated zinc by way of making comb-side a little more congenial. Before our bees were able to provide for themselves a fresh supply, in the following spring my friend's stock was bankrupt, he having to eke out their supply by feeding, while mine paid more than twenty shillings in the pound, and sent out a prime swarm three days earlier than his.

Numerous instances have come under my own observation during the last two winters of hives perishing (in one case seven) through the severity of the frost, while the hives through want of ventilation have been saturated with moisture.—W. JOHNSON.

STARVATION IN THE HIVE.

[1603.] Among the common class of bee-keepers a good per cent of loss occurs every year from starvation. Some colonies perish while there is yet plenty of honey in the hive, but the greater part of the loss is from colonies that have run out of stores. Beginners in their anxiety to increase their number of stocks are too apt to try to winter colonies that are too light in stores, but with those of greater experience there is less excuse for loss from this cause. *Guessing* at the amount of honey by lifting the hives in the fall is an uncertain guide. Even *weighing* does not in all cases give a correct idea of the amount of available winter stores on hand. The dependent and helpless condition of the bees when their stores are exhausted requires that an abundant supply should

be on hand at all times. To put away light colonies and depend on feeding them as their supply of food becomes exhausted during the winter is a poor plan and should not be encouraged. The bee-keeper who has to resort to feeding in the midst of winter is in an unenviable predicament, and when such condition of things is the result of a neglect to make the necessary prepartion for winter at the proper time he deserves censure rather than sympathy.

The variableness of winter, too, is such that sometimes much more than the average amount of food is consumed, and it may therefore happen that colonies which apparently had *plenty* at the beginning of winter are found almost at the point of starvation in early spring. It is important that a close watch be kept at this season and not let such colonies perish after having come through the hardest part of the winter, and thus become a total loss. A few pounds of food may bring them through until natural stores can be gathered; and if in all other respects in a healthy condition, they may prove among the most profitable stocks in the apiary, and all the trouble and expense will be amply repaid. Whatever form of food is supplied the relief must be given before they have reached the stage beyond which their case is hopeless. A few pounds of honey in small frames, laid on top of the brood frames immediately above the cluster, and so arranged that they can have free access to it, have always given good results in my experience. After putting on the honey, they should be covered up snug and warm, and, if much benumbed, a little artificial warmth judiciously applied by placing a warm brick in the upper storey, will have a very beneficial effect in reviving them. This method of warming the hive when there comes a pleasant day after a long continued cold spell may save many a colony that is too numb and weak to get out for a cleansing flight. One or two warm bricks wrapped in a cloth and laid in the upper storey will have a surprising effect in cases where they otherwise might not have vigour enough enough to get out. But a little help of this kind enables them to cleanse themselves and rearrange their position in the hive. My experience in thus giving relief with artificial warmth has always given good results, and more extended experiments may show that many a colony may be saved in this way.—H. D. Stewart, (*American Bee-keepers' Guide.*)

Brine for Soaking Dipping-boards.—Use salt brine, weak or strong, warm or cold, for soaking the dipping boards and the wax will not stick to them. It matters not about the condition of the boards—whether rough or smooth, of soft or hard wood, nor whether the edges are sharp or square. Temper the wax-sheets in warm brine-water before running them through the machine. Try this, and it may in the future help you to dispense, in a measure, with lye, starch, washing fluid, and all other lubricators. Brine water is both inexpensive and unobjectionable; besides, it is precisely what the bees like and should have.—M. M. Baldridge.

Hives with Top Entrance.—I observed one of your correspondents asks if a hive with top entrance has been tried; it is twenty years since I first tried it and I still use it with satisfactory results. I find the bees winter well in it, and with careful management very seldom swarm; in using sections the bees enter at once the section holder on the top, so no occasion to pass through the hive to get at them. For a small apiary, I can recommend them.—G. F. Perkins.

Feeding.—Mr. Simmins has told us of a very simple manner of feeding,—dry sugar, if rendered into paste with a little honey all the better, on a piece of cheese-cloth over the cluster pressed down hard between the frames, ready at hand for them to make use of at once, reminding us of the system up in the North of an inverted basin full of dry sugar on top of a skep, with a piece of perforated paper over the hole.—J. R. Powell.

Echoes from the Hives.

Meldon, Morpeth, April 4.—I have been keeping bees on the bar-frame principle for some years. I have thirteen stock hives all right after the hard winter we have had here. On March 26 I had to cut seven of them out of a snow-wreath five feet deep, after being embedded a week, one an Italian, the queen I got in October. She is all right, as I see the young bees appearing on a fine day. I got a recipe out of the *B. B. Journal* in 1885, and made some mead in March 1886, of which I enclose a sample. Will you please let me have your opinion of it? During the summer, a friend of mine came to play at cricket, and being rather hot and the mead good to take, it made him forget his Blue Ribbon.—Geo. Brittain.

[Having Blue Ribbon proclivities, we thought it advisable that the sample of mead should be submitted to a connoisseur in honey drinks. His reply is, that the mead was very good, and he thought a few glasses a-day would be beneficial to his system.]

Langford.—My first swarm of bees for this year on April 6, rather early, but it it was through some men having felled an elm-tree, and finding a stock of bees in it asked me to get them out that they might get the honey, thinking there would be a good lot of it; but we are all subject to disappointments, so were they. After sawing the bole, above and below the nest, I gave them a little smoke. I got the combs out as best I could, four or five of them, the longest about three feet. I shook them on the ground and let them run into a small straw hive, with a little honey in a section tied to the top. There would only be one or two pounds of honey, no pollen or brood. I brought them home and put them into a nucleus hive on three frames of honey and pollen, and started them as my first swarm of this year, and they are now (April 16) going on all well. Such a change in the weather!—all stocks busy taking in pollen.—J. Wilson.

Cheriton, Hants, April 13.—'This is the first spring morning; neighbour Harfield's bees are out as though they are going to swarm, and I counted no fewer than eleven butterflies in the lane,' remarked a gentleman to me this morning. On returning to my small apiary of nine stocks, I find the musical hum—than which there is no sweeter music—in pleasing plenty. Well, 'better late than never,' saith an old saw; and I readily adopt it, waiting for the fruition of my hopes. Thousands of tiny labourers are going to and fro, in the act of finding their food stores, but the modicum of pollen adhering to their legs is indicative of floral paucity.—Aged Amateur.

South Cornwall, April 14.—Young bees are flying, and there are solid patches of brood almost ready to be hatched, but not on more than two frames in a hive, as far as I have seen. There does not appear to be a graduated succession of grubs and eggs. Milder weather has set in and hopes are reviving. I regret to say that I have lost a stock—dead, all dead—leaving pounds of honey, and with, I should have thought, ample protection, in a house in which two others are doing well. But too often 'there is no accounting.'—C. R. S.

Honey Cott, Weston, Leamington, April 16.—Friday and Saturday last were grand days for the bees, which made them go off to the woods to fetch the pollen which was brought in in large quantities. In looking over hives on Saturday night, I found, what appeared to me, new honey in the cells, in stocks that had not been fed and that had no chance of getting any that had been fed to other stocks; as I have often proved before, stocks that have been wintered in temporary ½-inch hives have survived and appear as healthy and well as others that have double walls, thus in my case seeming to point contrary to what 'U. H.' said awhile back about cheap and nasty hives. It appears to me the chief thing is, for them to be kept dry and have plenty of food.—John Walton.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

H. W. Harris.—*Honey Plants.*—All the plants you name are grown for the production of honey. Buckwheat is an annual and may be sown from April to July; the same may be said of mustard and borage. Mustard secretes honey of rare quality. Borage is a good all-round honey plant, as it may be grown in any out-of-the-way place, dry banks and ballast hills may be profitably used by growing borage on them; it is not affected by drought as most honey-secreting plants are. Catmint and figwort are both herbaceous plants. The seed should be sown in March or April in the open; when the seedlings are large enough to handle plant two feet apart. Phacelia is an annual, and may be sown from March to May, and again in September to stand over the winter; these autumn-sown plants flower from March to May; sow where the plants are to remain. Phacelia is an excellent bee-flower.

O. B. T.—*Perforated Separators.*—These have been tried, and found to be either of little advantage or a serious disadvantage; in the latter case, when made from excluder zinc, the sections are finished with waved surfaces.

Honey-flow.—*Drone Brood.*—Your bees are in a very unsatisfactory condition, having a drone-rearing queen. At this season, and with so little brood, no such thing as a drone capping ought to be seen. If you examine more carefully you will perhaps find that all the brood capped over have these cappings; if so, destroy the queen and unite with another stock.

R. L. Richardson.—*Site for Apiaries.*—Anywhere much further south than your present abode. Heather gives little return. There are in the Midland or Southern Counties plenty of districts where large crops of honey can be obtained, but little heather. We know of one district where there are acres and acres of heather, and have painful experience of moving our bees to it—our expenses vastly exceeding our takings. Mid or West Berkshire is a fine county for bees. We know of one bee-keeper in West Berks who, last year, took over 400lbs. from four colonies—all he had.

Scotsman.—1. *Observatory Hive in a Shop.*—For each shop there should be two observatory hives, with crates conveniently arranged for transit. One hive will be at home in readiness to make an exchange every fortnight more or less. For further particulars see Simmins' *Modern Bee Farm.* 2. *Cloth underneath Feeders.*—Common glue will answer; but it is not desirable to place such material under the stand where the bees cluster and are annoyed by its presence. Open feeders, if we understand you to mean those of wood tongued at the joints, should always have such parts painted with white lead when putting together.

M. Ormond.—*Nadiring.*—Your plan of placing standard frames beneath the smaller frames now occupied by bees and brood, would probably end in *both* hives being utilised as brood-chambers. When honey begins to come in freely, place a hive with standard frames having full sheets of foundation, on the stand of your present hive, setting the full hive beside it. Place a board, covered by a sheet, sloping to the entrance of the new hive. Take out each frame from the old hive and shake, or brush off with a goose-quill, the bees on to the board, when they will all run into the new hive, wedged up a little in front. Cut out all drone-comb and drone-brood from the old frames and replace them in the old hive in the same position as before, and cover up warmly. Now put a sheet of excluder-zinc on the new hive, over the bees, and set the old hive upon it. The bees will rebuild the combs in the upper hive, and as the young worker bees hatch out, they will join the colony below, and the upper hive will be used for storing honey only. The operation is very simple, and should be performed on a fine evening when all bees are at home.

J. Stradling.—*Dwindling.*—If the bees in these hives would not cover more space than three sheets of note-paper, you must not expect to get much honey from them. Move these three hives gradually near to each other, and unite, reserving one queen only, and that the youngest and most sprightly in appearance—probably the one having most brood in its hive—and destroy the other two, unless you have use for them. In uniting cage the selected queen under a pipe-cover cage, on a brood-comb, in the centre of a clean empty hive, and place all other combs from the three hives, which contain eggs and brood with bees on both sides of this centre comb, alternating them from each hive, and close up with division-boards covering up warmly. Brush out any few remaining bees from the other hives on to a board sloping to the entrance, and they will run in. Perform the operation on a fine evening. On the following evening release the queen, and you will have one good colony out of three weak ones. Feed above with honey or syrup.

Cheshire.—The sample of comb submitted, in its transmission through the post, has been compressed together into an agglomerated condition, from which it has been impossible to extract a single bee entire. The only portions removable were heads, with occasionally a thorax attached, and these were in a condition so dry as to be wholly unfavourable to microscopic examination. There are, however, no symptoms of disease; the comb is very old, and it is desirable that it should be replaced by foundation.

C. N. Parkin.—*Reducing Thick Combs.*—If your frames are seven-eighths of an inch wide on the bar, shave the combs down level to the bar with a *sharp* knife that has got well warmed in hot water.

R. Driver.—*Excited Stocks in Skeps.*—Short of personal examination, we should say robbing has been going on, and in the mêlée a queen has been thrown out. If you are quite sure which stock is queenless, you might let her run in at the hole in the top of the skep; but most likely she is seriously injured. We should strongly advise you to have all your bees in frame-hives, then any necessary examination could so easily be made. Have the mice got into your skep? Do not mind writing again if you think we can help you.

*** *Several Replies to Queries postponed to next week.*

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Editorial, Notices, &c.

BRITISH BEE-KEEPERS ASSOCIATION.

The next Quarterly Conversazione and meeting of County Representatives will be held on Thursday, May 19th.

PRACTICAL WORK IN THE APIARY.

PREVENTING SAGGING OF FOUNDATION.

One of the great obstacles to the use of full sheets of comb-foundation has been from its stretching and sagging which caused it to become wavy, and the resulting combs would not be always just within the frame. The first sheets we used, of German manufacture, were so fragile, that it was difficult to fix them in the frames. However, by persevering, we managed to secure straight combs from full sheets, which were in those days the wonder and admiration of all who saw them. The sheets were obtained from Messrs. Neighbour, who were the only importers of them at that time; but subsequently we obtained a pair of type-metal plates, which enabled us to make our own of much stouter material. The imported sheets were generally very brittle, and often had incipient cracks, causing the sheets to drop down when the weight of the bees was upon them. To secure them in our frames we split the top bar in two, and after inserting the flat part of the foundation with which these sheets were always provided the two halves of the bar were screwed together. We tried brads, but found that the jar caused by the hammering would crack the foundation near the top bar. The frame was then placed between two frames of brood, with the result that every sheet would be worked out perfectly straight. Unless this precaution were taken it was found that the foundation was not strong enough to hive a swarm upon, but by placing a frame of foundation and a frame of comb alternately the weight of the cluster was so distributed as not to affect the foundation. This difficulty has been overcome by the use of much thicker and stronger sheets of from four to six square feet to the pound.

When a swarm of bees is placed in a hive filled with frames of foundation, the heat generated causes the wax to soften and the weight of the bees pulls the sheet down, which causes the cells to be elongated and distorted. For this reason it has always been recommended to use thick sheets and to allow for the stretching; they were not brought down nearer to the bottom bar than within about three-quarters of an inch. Besides the sagging there is also the wavyness of the sheets to be guarded against. This is caused by the bees working at different parts of the sheet at the same time and drawing it out unevenly, and always results when there are more frames of foundation than the bees can comfortably cover. To remedy these defects many devices have been tried.

For some time we used the Cheshire foundation-fixers, and although we obtained straight combs with them, there were so many objections to them, and we found them such a nuisance, that we were forced to give them up. In the first place, they were expensive, as it required at least six for each frame, or sixty for a hive of ten frames. Then the foundation had to be secured in the usual way by means of molten wax to the top bar. After a couple of days the fixers had to be removed, and in doing so, even with the greatest care, the cell-walls close to the points were broken causing the bees much extra labour to repair them. Then where the points pierced the foundation the bees would gnaw away the wax in their endeavour to remove the obstruction and cause holes in the combs which were never filled up. Such things are all very well when there are only two or three hives, and the bee-keeper has nothing better to do than to be constantly fussing with his bees, but when hives are kept for practical purposes and time is an object, the bee-keeper must find more simple and practical methods. Various substances have been tried embedded in the wax, such as paper, silk, thread, calico, wood, and glass, which have been used with more or less success; but it was Captain Hetherington who conceived the idea of introducing wire into the wax-sheets. For this purpose the foundation was made with a flat midrib so that the bases of the cells were flat and the wire was embedded in the midrib during the process of manufacture. The wire used is tinned and runs in parallel rows about one inch apart. This foundation, known by the name of 'Van Deusen foundation,' is readily accepted by the bees and is not liable to stretch. Captain Hetherington uses no other, and when we visited him we were delighted to see with what regularity his combs were built out, and to have ocular proof on a large scale that the brood suffered in no way from the wires.

This foundation may be fixed with molten wax in the same way as described on pages 185 and 186, or the top bar may have a saw kerf down the middle (Fig. 1), and the wax-sheet inserted into this. The simplest method of

inserting the wax-sheets into such top bars is to drive two nails into a board about one inch apart, allowing them to project three-quarters of an inch. The heads are cut off and the ends filed flat like a brad-awl. Place the frame with the top bar downwards, so that the

Fig. 1.

nails enter the saw-cut; then give the frame a slight turn so as to open the slit to allow the foundation to enter easily. Turn the frame back until the nails nearly touch the foundation and pull up the bar, when it will be found that the top-bar will grip the foundation securely. This plan can also be adopted in fixing ordinary foundation, and its only objection is the waste of wax, but for rapidity it cannot be excelled.

The foundation is now secure at the top but is loose at the bottom, so that new combs require great care in manipulation. Captain Hetherington has, however, hit upon another device, which makes the combs built within his frames as solid and as secure as if the wires had been attached to the top and bottom bars. This he accomplishes by using thorns, which are put through the bars of the frames. Ordinary thorns from blackthorn or acacia, about one and a half inches long, are selected, and holes are bored through the bottom and side bars at intervals of about two inches apart. When the foundation is in its place the thorns are driven through the holes, so that the projecting point of every alternate one touches the foundation on one side and the others on the opposite side. This effectually prevents wavy combs, and when these are built out the thorns become embedded, so that even rough usage will not loosen the combs. Many will prefer to use natural-based foundation, and this can be firmly fixed by wiring the frames.

There are various ways of doing this, and in Fig. 2 we give the method most generally adopted. The frames

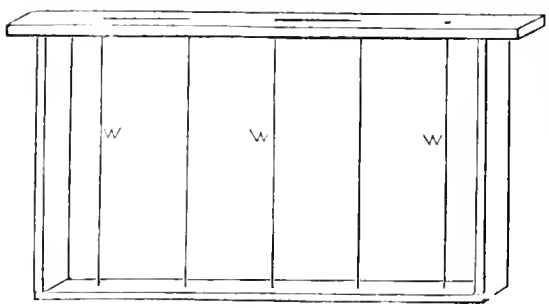


Fig. 2.

have to be wired with No. 30 tinned wire. The top and bottom bars are pierced with small holes, and the frame placed over a guide-board similar to that used in fixing wax foundation; but it must fit the frame well, otherwise, when the wires are drawn up, the bottom bar is likely to bend. Pass the wire W through the holes, as shown in Fig. 2, and draw pretty tightly. Turn down the ends and secure them by means of pegs of wood driven into the holes. Lay down the guide, and place on it a sheet of foundation, then over it put the wired frame so that the foundation touches the top bar. We may now embed the wire, and it can be done simply by using the flat end of a bradawl and forcing the wire into the wax-sheet. Even an ordinary wheel pastry cutter has been used successfully, but by either of these methods the wire is only forced into the wax and not completely covered by it.

Where a number of hives are kept much time may be saved by using what is known as the 'Woiblet spur-embedder.' It is essential for the proper use of this instrument that it be *hot*, for if used cold it is no better than the bradawl and the expense of getting one may be saved. The wheel is made of brass, and is of such a substance as to retain a certain amount of heat. The circumference has twenty-six teeth, a little more than one-sixteenth inch apart, and each of these teeth has a V groove on the outer edge. The wheel is heated in the flame of a spirit-lamp, the V groove is then placed on the wire, and the wheel ran rapidly along it from one end to the other. The heat melts the wax at each point, which cools as fast as the wheel travels forwards, and the wire will be found covered with wax. There is no necessity to fix the foundation to the top bar if this plan of wiring be adopted.

We would caution those who are going to use this style of embedder to get a proper instrument, as there are some in the market perfectly worthless. We have been shown one made of tin working on a pin driven through a piece of wood. We need hardly say such a thing could not be heated without burning the wood, and even if it could it would not embed the wire properly. We were also shown another made with a wheel about $1\frac{1}{4}$ inches in diameter, and teeth $\frac{1}{8}$ of an inch wide instead of $\frac{1}{16}$, and $\frac{3}{8}$ inch from point to point. We may say such an article is about as useless for the purpose as the one with the tin wheel. With a proper instrument we know of no method more rapid or more effective for fastening foundation.

Another way of wiring the frames is shown in Fig. 3,

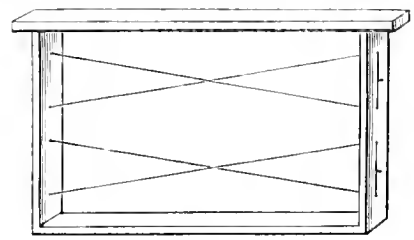


Fig. 3.

where the wires stretch diagonally from one side bar to the other and cross each other in the centre. The foundation is placed between the wires so that there are two on each side of it. In using wires in this way the foundation must be fixed to the top bar. In America, where the frames are rather longer than ours, an upright support of wood is used about the centre of frame, but we have never found this necessary. We have used shallow frames for extracting and also the Carr-Stewarton frames, but never found any necessity for strengthening the foundation in any way in these; and Mr. Carr recently sent us a specimen of one of his shallow extracting combs, which was beautifully worked out within the frame without any strengthening whatever. Wiring large frames is a saving in wax and an economy of time in manipulation.

USEFUL HINTS.

Weather.—Thunder-storms, copious showers, and a higher degree of temperature, are causing the meadows and corn-fields to assume a brighter green than hitherto. The fruit-trees are showing well for bloom, and after the long and dreary winter Nature is putting on a brighter garb. But there is a lamentable lack of forage for our bees. Literally, there is nothing within reach of our own save a few willows, and until the elms blossom, and the fruit-bloom opens, our bees will return with empty sacks and unladen legs. Many a hive around us is now tenantless, and we shall expect to hear that the loss of bee-life during the late inclement season has been exceptionally large.

Feeding must still be carried on, or bees will starve, their stores of late having rapidly disappeared.

Robbing should also be strictly guarded against, the bees showing a strong disposition to pilfer wherever a chance is offered; hives, in consequence, should be examined at evening only, or most certainly loss will accrue.

Sparrows, we are inclined to think, are the worst of all the enemies of the feathered tribes to our bees. The destruction wrought by them is almost past belief, where they congregate in abundance. Our house and outbuildings are covered with ivy, and although the net has been freely used, and from twenty to thirty sparrows taken on many a dark winter's evening from their favourite roosting-place, yet we have abundance left. The nests are destroyed once a fortnight all the summer through, and yet the sparrows are as numerous as ever, fresh immigrants, we suppose, taking the place of those removed. Fruit-buds disappear beneath their piercing ken, and depredations are committed on all sides. During our boyhood every parish beadle was deputed to purchase adult and callow birds and eggs, so that there was a strong inducement to every village urchin to collect them, and thus to repair the inroads on his purse made by his disposition to visit the sweet shops. But this, like many other good old customs, has ceased to exist, and the farmyards and corn-crops of our thriftless farmers are laid under heavy contributions by this sparrow pest. The best scare we have found to be a stuffed sparrow-hawk, with outstretched wings, suspended over our apiary. These pests too often take our young queens when on their marriage-trip.

Adapting Boards, or *Queen-excluding Honey-Boards*, as they are now called, are confessedly an English invention, although never brought into general use in this country. Since the introduction of the American 1-lb. and 2-lb. sections into this country indeed, they have entirely fallen into disuse, the general opinion being that the queen rarely enters a crate of these sections, and, consequently, there is little or no inducement to the bees to store pollen there. The American idea is the very reverse of this, and in Canada and the States these excluders are almost invariably used beneath sections, and between doubling or tiering hives. Climate, and a more copious and lengthened honey-flow, may in some degree account for this difference between the American and English practices.

The first English frame-hive, largely used, was the 'Woodbury,' with its crown-board, and three-eighths of an inch space between that and the frames. As a rule, when supers were placed on the hive the crown-board was removed and an adapting-board took its place. But the late Mr. Pettitt of Dover, about twenty-five years ago, converted the ordinary crown-board into an adapting-board, by cutting through it queen-excluding slots, having the same direction as the frames below, the slots being closed by zinc slides when supers were not in use. The large shallow supers in vogue in those early days were generally used by the queen partly as brood-chambers, which the adapting-boards of the period in no way tended to discourage, since they were simply thin square boards fitting the top of the hive, with a slot on each side, and a two or three inch hole in the centre, all large enough for the passage of queens and drones. Hence arose the adaptation of the crown-board as a queen-excluder. Then came queen-excluder zinc, with circular perforations, which proved a failure in the hands of our foremost apiarists, the bees either refusing to enter the supers, or, having entered, perishing in large numbers, apparently unable to retrace their steps. The next step in advance was the introduction of rectangular perforations of $\frac{1}{2}$ inch in length by $\frac{5}{32}$ in width in the zinc sheets, in lieu of the $\frac{5}{32}$ in circular perforations, and this has been largely adopted by our Transatlantic brethren in their queen-excluding honey-boards and drone-traps. For some time they imported largely from this country, but now they manufacture their own zinc. In an amusing satirical article, by Mr. Heddon, in the *Canadian Bee Journal* of March 7, p. 1010, on English apiarian inventions, he says:—'We notice that you have not yet discovered the advantages of honey-boards: but know that you will by and by, and when you do, we fear you will forget how you opposed them in 1888, and claim them as a new and novel invention. We are sorry the queen-excluding metal won't work over there, for in our apiary it works like a charm.' Now why this wide divergence of opinion amongst practical apiarists *re* the advantages of queen-excluding honey-board between brood and surplus chambers?

We suspect the cause to be that we English have used plain sheets of excluder zinc laid flat upon the brood-frames, while the Americans have used the Heddon and other similar honey-boards, in which strips of zinc are introduced between slats of wood, and a full bee-space is allowed below and above the zinc. We had several similar boards in use last season, and the sections built upon them were simply perfection: moreover, the bees entered the crates and worked through the perforations as freely as those colonies over which no excluder was used. *Fas est ab hoste doceri.* Not that we consider Mr. Heddon an enemy, but rather the best of friends, because he does not hesitate to tell us the plain truth, and, good-naturedly, to laugh at our overweening self-confidence. But that honey-boards will again come into use in English, as they have in American, apiaries, we have not the shadow of a doubt. In a merry mood, Mr. Heddon addresses our well-known humorous correspondent respecting slotted dividers, thus:—'Why, Amateur Expert, I am surprised that you should "claim" anything, good, bad, or indifferent, for the "*old chestnuts*," called "*slotted dividers*" by you, and "*perforated separators*" by Yankees, for lo, these many years...! Hadn't you better come over here and see what we have, and not get so far behind us as to be newly discovering our old discarded implements and well-advertised inventions?' Bearing in mind the Carr-Stewarton hive, the progenitor of the 'Heddon Invertible,' surely 'A. E.' may well reply by a *tu quoque*. And then, let Mr. Heddon note Dr. Tinker's admission in the *Apiculturist* for March last, where he says (p. 65): 'English bee-keepers used the zinc-honey boards before they were used in this country, but the general verdict was against them, and they were finally discarded as being a hindrance to the workers. Now I venture that their boards were not properly constructed, as they never used a wood and zinc honey-board. I do not regard their tests as affecting, in any way, the merits of perforated queen-excluding zinc.' This is exactly what we ourselves have been saying for the last two or three years; and we have at the present moment in course of registration a perforated queen-excluding zinc, which we hope will remove all further objections to the use of these 'honey-boards' when rightly constructed.

And this leads us to the subject of Mr. W. B. Carr's letter (*B. B. J.*, 159). To him we apologise for having overlooked, in our hasty glance at his article, the statement that 'he trusts to excluder zinc for confining queens to their own department.' This is as it should be, and the bee-world is under a great obligation to Mr. Carr for having taught, by the splendid quality of the prize honey at the late 'Colinderies' Exhibition, that the only way to obtain the finest quality of extracted, as well as comb, honey is by using shallow frames (or sections) over queen-excluding zinc.

Shallow Frames, $14 \times 5\frac{1}{2}$ inches as the standard size for a smaller or tiering-up frame, we, therefore, with him, strongly advocate; and we trust that when another Standard-frame Committee shall be appointed (not for altering the dimensions of the rectangle of the present standard frame, but for considering a few details in connexion with it) this shallow frame may receive the sanction and seal of the B. B. K. A.

Hives, Sections, and Racks, should now be procured without delay, and prepared for use by the insertion of foundation. Hives of ten standard frames, well filled with brood and bees, should be ready to receive the small surplus chambers, six inches deep (which take the small frames mentioned above), or crates of sections, by the time the fruit-bloom is well out, which must be late in this late season, and will therefore afford a greater promise of honey-yield than is customary from this source. Our bean-fields, except the winter-sown, will be a month later than usual, and, to all appearance, clover and hawthorn bloom will be unusually late. So much the more need, therefore, to have our hives boiling over with population when at last the good time arrives.

Equalising Stores should be attended to when looking over colonies, as it will often be found that one colony can well spare a comb or two of honey and pollen for replenishing another which is populous but short of stores.

Ventilating Quilts, where not previously removed, should at once give place to non-ventilating of enamel cloth, above which they should be placed for affording warmth.

CHEMICAL PROPERTIES OF POLLEN.

By Professor Cook.

Pollen-grains are really cells, and consist of protoplasm within a cell which has two layers. Professor Goodale, who is excellent authority, says that the contents of pollen-grains are:—1. Protoplasmic matter. 2. Granular food materials, such as starch and oil. 3. Dissolved food matter, as sugar and dextrine. Sach says that protoplasm, which we know, fills the pollen-grain, is rich in proteids or albumenoids. These substances, which are well illustrated in the white of an egg, the albumen of the blood, the casein (or cheese) of milk, are often called nitrogenous substances, as they contain nitrogen as well as oxygen, hydrogen, and carbon, which last three chemical elements are found without the nitrogen in starch, sugar, and the oils, or fats. In addition to the proteids, pollen also contains much water and several inorganic elements, such as the alkalies, lime, magnesia, phosphoric acid, and sulphuric acid. It would be impossible to give an exact chemical formula for pollen. Like our grains, which it somewhat resembles, the composition varies with the kind, and probably, somewhat even in the same kind. Thus I find these formulæ for oats and wheat:—

	Oats.	Wheat.
Water	12·7	12·5
Albumenoids	10·1	13·5
Starch	56·0	68·4
Oil	2·3	1·2
Fibre	16·6	2·7
Ash	2·3	1·7

While these are much alike, we see a marked difference, especially in the amount of oil and proteids. I presume pollen is richer in proteids than either of the above; and so, while flour will serve as a substitute for pollen for our bees, I dare say pollen is richer and hence better. As food is not perfect unless it contains all these different elements: Proteids, carbo-hydrates (starch and sugars), and oils, and as honey contains only the sugars, we see why our bees must have the pollen. This last supplies the proteids and oils. We also note how desirable that they have a nitrogenous food particularly rich in the proteid elements. As we could get along without much albuminous food, such as muscle, cheese, beans, &c., for a time if we exercised very little, and possibly be the better for it, so our bees may go for weeks—yes months, in winter—when they are so inactive, with no pollen, and so with no proteids, except the very little existing in the honey, and possibly they are the better off.

(1.) *What proportion of the food of the larvæ is pollen?* The larvæ of the bees are, I think, fed almost on pollen. The old view of Swammerdam and Dufour, that bees digest their food, and feed it, thus digested, to the larvæ, is still entertained, in part at least, by such able authorities as Mr. Cowan, Schonfeld, Planta, &c., (see *British Bee Journal*, 1887, p. 185). On the other hand, Leuckart, and his able student, Schiemenz, believe that the food of the queen-larva, and most of that of the other larvæ, and that of the laying-queen, is not digested food, but really a secretion from the large glands of the head of the worker-bee. This view, which it seems to me is the more rational one, makes the food of the larvæ like milk, instead of chyle. We would not say we fed the young calf on hay and oats because these formed the rations of the mother cow; so we do not say that pollen is the food of the larvæ because bees need it to form or secrete food for them. The cow must have albuminous food, or she can give no milk very long. So the bees must have the pollen to elaborate food for the larvæ.

Dr. Planta shows that the food of worker larvæ differs from that of queen and drone larvæ. Schiemenz showed that the worker-larva, just at the last, was fed on pollen, and, presumably, honey. Thus quite likely the composition of the food is thus changed. Thus we might say that the queen-larva was fed profusely with exclusive bee-milk, while the workers were fed scantily of the same, which at last was adulterated with honey and chyle. Schonfeld shows that it is not impossible for the bee to regurgitate the chyle. Indeed, the pollen in the worker larva's intestine, just before it pupates, or before it sheds its alimentary canal with its last larva moult, shows that it is fed on chyle in some part. As Schiemenz shows, there are good reasons to think that the laying queen is fed on the same bee-milk.

(2.) *Is pollen a part of the regular food of the mature bee?* I have already answered this question. The imago or mature bee must have pollen, not only to nourish its own tissues, but the nurse-bees are equally dependent on it to form the bee-milk, or secretion which they feed to the queen and all larvæ. If we feed a cow simply on starch or sugar, she would soon pine away, and her milk-glands would cease to secrete; so if we feed our bees simply on honey, they likewise, when active, would soon waste away, and, as all observing apiarists know, they could not care for brood. Pollen is absolutely necessary for bees when functionally active.—*Agricultural College, Mich.*—(*American Gleanings.*)

Accident to a Bee-keeper.—Mr. Roberts, a bee-keeper at Gosmore, near Hitchin, who some little time back went over to New Zealand, to start bee-farming, &c., while climbing a tree to take a swarm of wild bees, the bough broke, and he fell with such violence that he broke both arms and a leg. He is now doing as well as can be expected.—G. J. B.

Grimsby Naturalists' Society.—On April 5th, a lecture was delivered before the members and friends of the above Society in their museum in the Masonic Hall building, by Mr. H. O. Smith, of Louth, upon the 'Hive and its Wonders.' The chair was occupied by Ernest L. Grange, Esq. Before introducing the subject, Mr. Smith referred at some length to the usefulness of societies of this description, affording, as they do, such ample means of improving the minds of young men who are inclined to follow natural history pursuits or investigation, and such a charming mode of obtaining knowledge should be more fully taken advantange of. The lecturer then gave a very interesting account of the habits and management of 'Bees;' and from his long practical experience, aided by diagrams, hives, and other illustrations, he was able to thoroughly describe their history and process of working. He was listened to with the greatest interest and attention throughout, and a vote of thanks, proposed by E. Bannister, Esq., J.P., seconded by F. Wood, Esq., was carried, and terminated a very successful meeting.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

IN-AND-IN BREEDING.

'Ce n'est pas par le *raisonnement* mais par le connaissance d'un nombre considérable de *faits* que la question de consanguinité sera élucidé.'—Dr. Rascol.

[1604.] I have read with some interest the correspondence on this head appearing in the *B. B. J.*, over the names of Mr. W. B. Webster and Mr. Woodley, which culminated in your own leader in the issue of the 5th instant. I am willing to join the heterodox on the question, and to combat, as far as my abilities allow me, the views of Mr. Webster and yourself. I think I may say, without wishing any offence, that this matter of consanguinity is by no means so clearly understood in its physiological aspect as it should be, and that in the case of your own article wisdom has nodded, and you have slightly confused cause and effect.

Let us look at the facts—not exactly as bee-keepers, but as amateur physiologists, anxious to obtain information upon the subject as it affects all animals (using the word in its largest sense) from man downwards. I agree with you in the axiom that 'Nature abhors self-fertilisation,' if by that you mean the fecundation of a plant from its own seed; but there is a wide difference between this and intimate consanguineous relationships.

Further, your (if you will permit me to call it so) rather *ad captandum* argument of the Providential interference to prevent in-breeding is somewhat far-fetched. In all the Sacred Writings there is no direction to the contrary. But, on the other hand, if it were seemly and germane to the subject, I could cite numerous instances from the Scriptures to show that no Divine wrath has followed the infringement of what you assume to be an immutable law. If you take the chosen people as a guide on the point (and we may fairly assume that, as they were the recipients of the Mosaic law, they should know the Divine will), then you have consanguineous marriages between uncle and niece, aunt and nephew, at which modern civilisation shudders. Are the Jews, on this account, notorious as a physically or mentally degenerate race?

As against your axiom I am prepared to quote another, viz., 'Consanguinity *per se* is not injurious.' This is not mere boldness, as I hope to make apparent before I conclude. We are all anxious, I hope, to arrive at the truth, and in dealing with the subject, I will, in addition to my own remarks, quote from one or two writers, well qualified to speak, and I trust we shall find that the view I take is not by any means a *petitio principii*.

In a question of this kind it is necessary to start from a firm basis, upon which all parties are agreed. It will not be denied, I think, by the greatest opponent of in-breeding, that, given two perfectly healthy non-related animals, the produce of those animals must (accidents and usual faults excepted) be healthy also. Why should this fact cease to be a fact, because the producers are blood-relations? Is it not a fact that this question has been debated on unscientific lines, and an unbalanced and hastily considered judgment has been arrived at? Take two known consumptive or scrofulous human subjects and unite them, and the chances are, many thousands to one, that the progeny will be consumptive to a greater degree than their parents. Again let two of the lower animals be allowed to breed, one being healthy, and the other having some organic or physical defect, the produce will be healthy and defective in a varying degree. It matters not one whit that the parents are utter strangers in blood. Natural laws cannot be altered or defeated. But where an evil of this sort is apparent between strangers, it is ten times more apparent when the parents are nearly related. Why? For a simple natural reason. First cousins are the produce of a pair of grandparents. Presume one or both grandparents to be suffering from an organic disease, does it not follow that both the cousins have the seeds of it in their own bodies, and that the bodies of their progeny are favourable incubators for its propagation? Such a result is natural; but it is no *more* natural in the case of cousins than it would be in that of complete strangers, given a like defect in each. To refer, in passing, to bees. What bee-keeper would willingly mate a queen the produce of one of known bad qualities to a drone from a hive possessing similar or equally bad qualities? Would he stay to consider whether they were nearly related or not, or would he strive to mate his queen with a drone of known strain qualities? I venture to say that, given a queen—of all those good qualities which we bee-keepers so much covet, and having some of the defects we seek to avoid—fertilised by a drone from the same hive, and therefore her brother, the resulting progeny, instead of being a deterioration from the original stocks, would be an improvement upon them. I say so because the qualities would be fused, and therefore accentuated. The converse argument holds good, and defects would be similarly demonstrated and accentuated.

In birds and the lower animals effects are as strongly marked as in the human species; but inasmuch as more care can be exercised in their mating than that of *genus homo*, those effects can be seen, and, if bad, guarded against. I have, myself, to a small extent, proved that there are no evils to be feared from consanguinity, but my experience is hardly lengthy enough to allow me to dogmatise, and I therefore content myself with giving the opinions of men who have devoted years to a study of the question, which opinions are diametrically opposed to those of yourself.

Such of your readers as are canary fanciers will know what 'Sib-bred' birds are. Can they say that there is a deterioration in the 'Scotch fancy' because the birds have for (bird) generations been in-bred? I think our canny Scottish neighbours know quite sufficient on this point not to suffer their birds to lose ground for any attachment to in-breeding for itself. They do it to fix certain good qualities, at the same time courageously sacrificing every weakling, and persistently refusing to breed from birds displaying any weakness or defect.

The first writer I shall refer to on this question is Mr. V. la Perre de Roo, in his work, *La Consanguinité et les Effets de l'Hérédité*. M. de Roo was about to marry his first cousin, and being then anxious to ascertain the facts regarding consanguineous marriages, he consulted his 'family doctor,' who happened to be a courageous man, not hide-bound by the beliefs of certain of his fellows, and he distinctly advised the union. Dr. Herreboudt informed M. de Roo that the story of deaf-mutes being the result of consanguineous marriages was moonshine (only he used a more polite French equivalent), and requested him to call at the Deaf and Dumb Institute at Bruges and make his own inquiries. He did so, and found that *not one child in the Institute was the issue of first cousins or related parents*. After his marriage, M. de Roo again became uneasy, and he then began his experiments to prove the falsehood of the general opinion, being personally, as he frankly confesses, much in favour of the general opinion. The result of

his researches, therefore, is against his views, and entitled to all the more weight. In the course of his remarks, he says:—

'In the face of these facts, which all the world can verify, the theoretical statements of the adversaries of consanguinity may be lightly esteemed, for all my observations are based on facts which, for the most part, took place under my own observation, and which I can conscientiously affirm. . . . Therefore, whilst the opponents of consanguinity waste their time in interminable and fruitless discussions, which can never throw the slightest light on the subject before us, let us employ our time more usefully in examining the results of numerous direct and indirect experiments . . . which alone can solve the difficult problem of consanguinity in man and animals.'

It would be too great an infliction on your readers to set out at length the whole of Mr. de Roo's experiments: suffice it, that for a period of about twenty years he carried on these experiments with nearly all the breeds of poultry, pigeons, and canaries; and, so far from finding that in-breeding was injurious, he testifies that after many generations of pairing, brother to sister, parent to child, and so on, the points of the various breeds became more definitely fixed, and their physique was wonderfully improved. Naturally this gentleman, in trying an experiment of so delicate a nature, took that care that one would expect from an ingenious and upright man, notwithstanding that the results were against his former convictions. He did what every man does who wishes to guard against disease or deterioration in his domestic birds or animals, viz., he persistently killed off all those showing any taint or physical defect, and so his experiments produced the result that one who studies this subject with an unprejudiced mind would expect. It may be said that it was this care of Mr. de Roo that to a great extent accounts for his results, but, as against this, I would ask whether the greatest enemy of consanguinity would willingly allow bees, birds, or beasts, to breed where the parent on either side was unhealthy. If, therefore, in non-sanguineous unions this care should be exercised, why should it be denied in the other? I again repeat, at the risk of being thought tiresome, that given the same condition in sanguineous and non-sanguineous unions, the former will produce progeny as healthy and perfect as the latter. I would almost go farther and say that the chances of perfect breed in the lower animals are greater in the former than the latter.

The next authority I refer to is Mr. W. T. Greene, M.A. M.D., of Peckham, a Fellow of the Zoological Society, and a man who, to judge from his published writings and his qualifications, is not likely to run after a fad, particularly one which runs counter to much public opinion. He says that for five years he has bred from the progeny of a single pair of fantail pigeons, and that their offspring instead of degenerating has decidedly improved, and the latest batch is finer than the original pair from which all are descended.

He then says:—

'Consanguinity alone will not produce disease in the offspring. If the related parents are strong, healthy, and without blemish, the tendency will naturally be to establish and confirm those valuable and desirable qualities; but on the other hand if the consanguineous parents are undersized, eachetic, or rachitic, it will as certainly follow that their progeny, should there be any, will inherit their deficiencies with re-duplicated intensity. In such cases, however, Nature provides her own remedy, for after a time the race thus produced will fail from sheer lack of vigour to maintain it, and the great principle enunciated by Darwin, of the survival of the fittest will deliver the world from a burden, and the lover of beauty and harmony from an eyesore; but to argue that consanguinity *qua* consanguinity is productive of deterioration is an absurdity that needs only careful consideration to be cast aside as an utterly untenable delusion . . . . I have inbred cockatills for the last ten years and yet perceive no indications of a deterioration.

'It is said that the marriage of cousins produced diseased children, I do not believe it at all. If the cousins are thoroughly sound their children will be healthy; if they are not, their offspring will be diseased, just as happens when two non-related consumptive people marry. Heredity is a potent factor in the determination of health, no less than of disease, and so far as I can judge it does not matter an iota whether it is derived from one side or the other, but when it comes from both, the tendency to either strength or weakness is increased to an appreciable extent, or in the ratio of 1 to 4, and so on in geometrical proportion.'

These are weighty words for a man, who by culture, profession, and knowledge of the subject he deals with, is entitled to respect.

I need not enter at any length into my own experience on this subject with fowls, pigeons, canaries, and rabbits, and I, therefore, simply record the fact that so far as it goes it certainly corroborates the results of M. de Roo and Dr. Greene. That these results are not isolated is shown by the following extract from the editorial notes in a journal devoted to the poultry and pigeon fancy:—

'The late Mr. Jayne, a celebrated and successful breeder of short-faced Almond Tumblers, used frequently to boast that he had not had any fresh blood in his loft for fifty years.'

According to Mr. Webster this stock of pigeons *must* have died out, because all the breeding pairs would of necessity be nearly related. I venture to say, as M. de Roo observes, that in a state of nature birds and animals seem to prefer a consanguineous union to a non-related one. On this head I dissent directly from the propositions of Mr. Webster and yourself.

One cannot with insects like bees carry on a series of experiments as with domesticated animals, but, arguing from the greater to the less, is it not reasonable to suppose that what is true in the cases quoted, and arguments used in respect to other animals, is true of bees? It will require in the bee world a second Lubbock to arise and demonstrate whether bees are subject to the same natural laws as other animals. Until some better evidence is adduced I for one prefer to stand by natural opinions backed by men who have spoken so boldly as those quoted, and I would suggest that no bee-keeper should, out of mere fright at the bugbear of in-and-in breeding, introduce into his apiary fresh blood from a source of which he knows nothing. Let him not think, if his stocks be perfectly healthy and good workers, that he has anything to fear from the fact that the fertilising drone and the young queen are from the same mother.—THETA, *Withington, 14th April*, 1888.

[We should have been glad if 'Theta' had favoured us with his views a little earlier, for then his arguments could have been dealt with *seriatim*; as it is, the subject must remain in the region of 'Correspondence,' where there is room for much divergence of opinion.

Lifetimes of observation and study, instances and experiments without end, have confirmed scientific men in the general truth of what appears to be a law, viz., that in-and-in breeding (the continued crossing of near blood) is detrimental to the race, variety, or strain; and if Mr. de Roo's or Dr. Greene's opinions to the contrary obtain for 'Theta' any converts, we raise no sort of objection, but we opine that some day they will find they have something to unlearn.—ED.]

IN THE HUT.

'He is not worthy of the honeycomb,
That shuns the hive because the bees have stings.'
SHAKSPEARE.

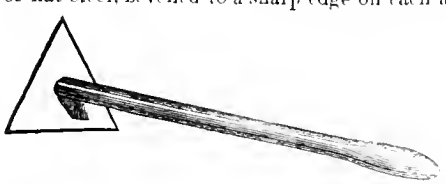
[1605.] I think about the most *uninteresting* heading that could be found for an article in our *Journal* is the one of 'Railway Rates' (perhaps, excepting 'Poor

Rates'), and about the most *interesting* paper we have had for some time is on this subject, from the pen of Mr. F. Boyes; it is quite an artistic composition, working up as it does to such an acute climax—'all through the obstinacy of an official who, I afterwards heard was—shall I say it?—yes, a jealous bee-keeper.' Will not Mr. Boyes favour us with some letters of his name, so that every bee-keeper in Yorkshire may identify him, and—bless him, or better still, pronounce on him *Anathema maranatha!* He is a cad whoever he is.

Some time ago I got a hint from Mr. S. Abbott as to the best means of preventing the propolisation of one part to another, which I hope he will pardon me for making public. It is, to rub a little vaseline on the parts likely to touch, when making the first spring examination, or using new frames. The bees won't have anything to do with the stuff, and manipulation is rendered easy all through the season.

Who the gentleman is who sends you the valuable contribution, 'Bee-keepers' Vocabulary,' is, of course, a mystery, but he has dashed from the lips of poor 'X-Tractor' a cup he hoped some day to sip of; and this is how it is:—I have during the leisure evenings of the past two winters burnt the midnight oil in preparing material for a bee-keepers' dictionary, knowing such a thing was much wanted, and now we have the very beau-ideal appearing in weekly numbers in the *B. B. J.* Coming in this form, we are bound in time to swallow the dictionary. It is a capital idea, and if my MSS. be of any use to the author, it is at his service.

I have come across a capital tool for uncapping in extracting or stimulating, and also for scraping propolis and wax off sections or frames: it is called a plumber's scraper (purchased of ironmongers) and is a triangular piece of flat steel, bevelled to a sharp edge on each angle,



each angle being about two inches; in the centre is fitted a wooden handle about eight inches long. A pulling motion uncaps beautifully, the cappings rolling downwards, and nooks and corners can be got into with facility. When one edge gets soiled, the other two are ready at a turn of the wrist. In extracting, we often find the usual uncapping-knife scarcely what we require, by reason of the waxiness of some combs, and to make all things equal some honey has to be levelled down, *i.e.*, long cells much shortened. As there are *varieties* of plumbers' scrapers, be sure to get them right-angled triangle, no kind of oval.

As Mr. 'Useful Hints' hinted a week or two ago that he was on the track for a true definition of the word 'Blizzard' (blessed Blizzards!), I read his remarks to an eminent American, and he said they were 'exactly there,' but *falling* snow is not a necessary condition.—X-Tractor.

[We shall be much obliged by our correspondent lending us his MSS. We shall no doubt find it of great service in our compilation-work.—Ed.]

AN ESSEX RECTORY.

[1606.] My new home in Essex has one feature about it that I certainly did not anticipate. My hives at Berkhamsted were reduced to three, and sent at great trouble and expense into Essex. Since spring has appeared, I find that there are already three colonies inhabiting the upper part of my house! They have settled, curiously enough, all of them on the north-eastern side. We cannot get at them from the inside, as they have settled just under the eaves in a very inaccessible position. They have evidently entered by a hole in the plaster. A very high ladder would be required to reach them. My Essex gardener seems to think they ought to be dislodged, if only to prevent other bees from following their bad example! I am rather puzzled to know what course to adopt. Is it advisable to allow them to remain? Were they accessible from the interior, there would be no difficulty; but they are not. I don't care to mount a high ladder and try the effect of puff-ball or carbolic acid. I cannot ask others to run a risk which would be a serious one to a person at all afraid of bees. Perhaps, the best way, after all, will be to let well alone. But I shall be glad of any hints.—E. Barrum, D.D., *Wakes Colne Rectory, Essex.*

[If the bees are not a serious inconvenience, their residence may be permitted. If at any future time it be desirable to evict the tenants, it would be advisable for an expert to make a reconnoissance on the spot, and act accordingly. No general directions can be given for getting bees from 'an inaccessible position.'—Ed.]

HONEY.

[1607.] Honey consists of the saccharine substance collected by the bee (*Apis mellifica*) from the nectaries of flowers, and deposited by them in the cells of comb. While this is the commercial article, yet the production of honey is by no means limited to the bee, for there is a honey-ant in Mexico which stores a nearly pure syrup of uncrystallisable sugar. A. Vieliers has reported also a honey from Ethiopia, which is the product of an insect resembling a large mosquito, which, like our wasp, makes its nest in cavities in the ground. The natives call the honey 'tasma,' and ascribe to it medicinal virtues, especially using it as a cure for sore throat.

The composition of honey is complex, but the essential constituent is a mixture of dextrose and levulose; and a solution possesses the physical property of turning the plane of polarised light to the left. This property furnishes an easy and accurate method for the detection of the adulterated article; and, while I have never met with a known pure honey which was not levo-rotatory, yet there are statements on record which claim that honey has been met with which was dextro-rotatory.

Honey is adulterated as much, if not more, than most articles of food, and, while the adulterant is harmless, yet the fraud to the purchaser remains. The substances generally used are glucose and cane-sugar. The former, on account of its low price, has been the most common, and, mixed with enough of the genuine article to give it a flavour, is sold extensively as 'pure extracted honey.' One will also find a small piece of genuine comb honey in a jar which is filled with glucose syrup. The honey in the comb gradually diffuses itself through the mass, giving the required flavour.

I have examined forty-three samples of honey, the purity of which was unknown, and have also examined two samples of known purity. The method of analysis was as follows:—A Soleil-Scheible polariscope was used, the normal weight of which is 26·048 grams; that is to say, 26·048 grams of pure cane-sugar (sucrose) dissolved with 100 c. c. water, and a tube 200 m. m. in length filled with the solution, will indicate 100 on the scale. Cane sugar and glucose will therefore indicate 'plus' and 'levulose,' or honey will mark 'minus' the zero. The same weight of glucose will turn the plane so far to the right (or plus) that it will exceed 100. The commercial glucose, when the normal weight is used, will indicate from 155 to 170, according to the greater or lesser amount of dextrine present. Pure honey will indicate from ·4 to ·15. Seldom, however, as low as ·15, but I have found this figure in old honey of undoubted purity. It will, therefore, readily be seen that owing to

the high dextro-rotatory power of glucose, that a comparatively small amount will neutralise the lævo-rotatory power of the honey, if added. The same, of course, is true, if cane-sugar syrup is added, but in this case the indication will not exceed 100, as will be the case if a sufficient amount of glucose is present.

The mode of procedure is as follows: 26·048 grams of the honey are taken, dissolved in a flask of 100 c. c., and the solution filtered through a small quantity of bone-black in order to clarify the solution. A tube of 200 m. m. is then filled with the solution and placed in the instrument, and the instrument adjusted, the indication of the scale being noted. If 'minus,' we may assume that the sample is genuine, for while it is perfectly possible to produce a honey which is adulterated, which will indicate 'minus,' yet at present, after conversation with and inquiry from those engaged in the business of manufacturing honey, I am of the opinion that the adulteration consists in the use of dextro-rotatory substances. If the indication of the scale is 'plus,' however, that will indicate that either cane sugar or glucose has been used; and if the scale indicates more than 100 the presence of glucose is conclusive, but if not, we must proceed to learn which. This is accomplished as follows:—A solution is prepared as stated, or 50 c. c. of the original solution is taken and treated with one-tenth volume of hydrochloric acid, heated at a temperature of 80° C. for a few minutes, cooled, and repolarised. If now the scale still reads to the right the presence of glucose is assured, while if to the left cane sugar is shown to have been the cause of the original reading being to the right.

The action of the acid is to 'invert' the cane sugar—that is, to change it to a substance which no longer is dextro, but is lævo-rotatory, and which is termed *invert* sugar, and acts in the same manner as honey. While cane sugar can be added to a honey, which will not indicate 'plus,' yet practically the amount used is so great that such is not likely to be the case. If such should be, however, by what is known to chemists as 'double polarisation' would yield the amount, this being the method for determining the small amount naturally present, and if more than 5 per cent was obtained it would indicate a *probable* addition.

Temperature has more or less effect on the rotatory power of invert sugar, consequently all the readings of the solutions should be at a uniform temperature in order for a proper comparison.

As an adulterant, however, invert cane sugar, if made without the use of acids, and not added in too great an excess, would prove a substance rather difficult to positively detect. If used to a large amount, its great lævo-rotatory power—a pure invert sugar solution marking at 25° C. 32·5—would indicate its presence. It has been tried, but, I understand, has not given satisfaction, and when used has been used with glucose, no honey whatever being used. It has been suggested by some that an examination of the ash of honey would indicate as to its purity. This is a mistake. I have found the ash alkaline even when glucose has been present, and I have found phosphoric acid to be present in a sample claiming to be 'virgin honey,' and containing no honey whatever. The amount of ash is so variable in known pure honey that this is no guide.—Shippen Wallace, *Analytical Chemist*.

NOTES ON BEE-HIVES.—SECTIONS.

[1608.] In my former notes I have stated reasons for my preference for wide frames in working for sectional honey, and in continuing my notes I might say I find these frames are admirable for working glass sections.

The following is a very easy way of producing them at the lowest cost, and at the same time showing one of most enticing, interesting, and beautiful objects that can be put upon the table. Four pieces of glass are fixed or kept in place within a wooden section by means of a small quantity of gum or china cement. When whole sheets of foundation are used gum is unnecessary. Whole sheets of foundation are fixed by painting molten wax very neatly round all the edges of the foundation by means of a sable hair pencil, the surplus wax being removed with a penknife as soon as possible before the wax gets quite hard.

When the section is placed on the dish for the table, the wood section is removed, and—!

Glass without a green tint (observed by looking at the edges) should be used, and all edges should be polished. Both the cutting of the slips and the polishing of the edges can most easily be performed.

A more beautiful but more expensive glass section is one I have lately designed. It is a simple rim of one piece of glass accurately made and having a small ridge on all the four inner surfaces to fix the foundation against by means of a very small quantity of molten wax.

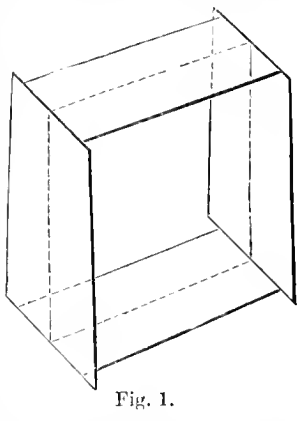


Fig. 1.

The dotted lines in Fig. 1 show the position of the ridge, and Fig. 2 is part of a side showing the shape of the ridge alluded to. I need not make any comment upon their attractiveness in shop-windows,

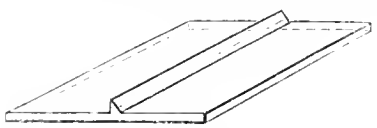


Fig. 2.

for I have never seen anyone that could resist admiring them.—T. Bonner Chambers, F.L.S., *Tref Eglwys, Caersws, Mont., April* 12.

POOR QUALITY HONEY—THE EXTRACTOR—HONEY A LUXURY—THE SUCCESSFUL HONEY PRODUCER.

[1609.] We sometimes affect righteous indignation toward those who adulterate honey. No words are caustic enough to express our wrathful ebullitions. But did it ever occur to you that the possibilities of such nefarious practices are greatly enhanced by the poor quality of *unadulterated* honey, especially extracted, often found on the market?

Probably more injury has been done the bee-keeping interest by putting upon the market poor honey—unripe, sour, thin, or detestable in quality—than by commercial adulterations. I only pretend to voice my own convictions when I say that the extractor, regarded by many as the greatest invention in modern apiarian appliances, has done the industry more harm than good. It is an easy matter to concoct a mixture, independent of the aid of bees, that will taste better to the average purchaser of sweets than some of the so-called honey got with the aid of the extractor. When a novice first gets an extractor and finds how easy it is to 'sling' honey, he is, perhaps, anxious to astonish his neighbours by his wonderfully superior bee-lore.' He is after large yields with no thought of quality. He extracts early and often—as the trained ward politician in the next precinct votes. Instead of honey, he extracts nectar. Instead of a rich, oily, aromatic delicacy whose fragrant memories will linger long after the joy has passed, he has some

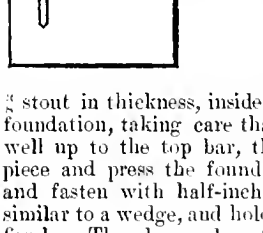
sweetened water that will hasten to convert itself into vinegar, as if ashamed to attempt to counterfeit what it can never equal.

If nothing but the best were sold, it would be impossible to imitate it successfully. Honey is considered a luxury in America. Luxuries for the table must appeal to the eye, or the taste, or both. If we want our honey on the tables of the rich it must win its way there on its merits. It must be proved in the same manner as the pudding—in the eating. Honey that is good enough to go into the dining-rooms of the wealthy will find its way into the kitchen of the labouring man—for there is nothing too good for the working man in this country to eat. His taste is educated. He lives more royally than royalty itself a hundred years ago. We can no more deceive the taste of the poor than the rich, and the former, or at least the middle class, are among the best customers. Now if we want to cater to the taste of the consumer, we must produce such an article as will please when bought. The time was when honey was honey, and little was known of the different grades. Not so now. The successful honey producer of the future is to be the one who not only sells nothing but a ripe article, but who puts it in such attractive packages as the buyer delights to take home with him when he has company to tea.—EUGENE SECOR, *Iowa* (*American Apiculturist*).

FIXING FOUNDATION.

[1610.] In perusing the *Journal*, April 12th (p. 193, No. 1585), I find a friend's description of the way he fixes foundation in frames, which I may state is very similar to the plan on which I have constructed my frames for the coming season. I beg to forward you particulars of the slight difference, for insertion in *Journal*, if you think it likely to be of any benefit or worthy of consideration.

In the place of the two strips of wood $\frac{3}{8} \times \frac{3}{8}$, length of inside of frame, I take two strips of wood $\frac{3}{8}$ wide, and $\frac{3}{16}$ thick by $13\frac{1}{2}$ long, bevelled on one edge at an angle of about sixty degrees; one of those strips I fix firmly to the inside of the top bar with the bevel inclining to the bar. Then place the frame flat on the bench and insert a piece of wood $7\frac{1}{2} \times 13$ inches, and $\frac{3}{8}$ stout in thickness, inside the frame; on this place the foundation, taking care that the upper edge is brought well up to the top bar, then take the other bevelled piece and press the foundation firmly between the two and fasten with half-inch wire nails. The bevel acts similar to a wedge, and holds with a slight pressure, very firmly. The sharp edge of the bevel should be slightly taken off or rounded to prevent cutting the wax.



I should be pleased to know if the method I have endeavoured to describe in the hope that it may be of some benefit meets with your approval. Thanking you sincerely for the great assistance I have received through the medium of your valuable *Journal*, which is weekly anxiously looked for.—W. HORNER, *30 Cumberland Street, Skipton-in-Craven.*

HIVING SWARMS.

[1611.] Now that the swarming season is approaching, I think that the following remarks may prove acceptable to the readers of the *Journal*. In most of the modern works on bee-keeping the advice given to those about to hive a swarm is, first, to place a straw skep *under* the bees when they have settled, and then either shake or sweep them into it. For several seasons I have adopted what appears to me a far simpler and more advantageous plan. It is to reverse the old order of things, and suspend the skep by means of a strong cord *over* the swarm, taking care that the branch on which the bees have settled comes in contact with the inside of the skep. In a short time the bees will be seen going up into their new home.

The advantages I claim for my plan are, total absence of anything which irritates the bees, as the old plan of shaking or sweeping generally does, and that all danger of crushing the queen is done away with. I do not use a smoker at all during this process, but let the bees take their own time about going up, which I find they do in about half an hour.

Sometimes it is necessary to shade the skep if the bees have swarmed on a spot much exposed to the sun, as there is a chance of their going off on a second excursion if very heated and allowed to remain so.

I trust you will find space for these remarks in your valuable paper.—EDMUND J. JONES, *Ysgubor-Fawr, Penderyn, Aberdare, South Wales, April 18th.*

DRIVING BEES.

[1612.] I am quite a beginner at bee-keeping, and if it is not trespassing too much on your space, I should like to relate my first experiences of driving last year. I commenced with a stock and a swarm in the spring of 1887, and made up my mind when the autumn came, and with it my holiday, that I would devote part of my time to driving condemned bees, so as to gain a little experience and increase my stocks. August duly arrived, and I started away about the middle of the month to spend a fortnight or so, as is my custom, under the parental roof in one of the eastern counties. I soon found that I should have plenty of work to do, as there were any number of skeps in the neighbouring villages, and no sooner had my fame (?) got abroad than the cottagers were sending up nearly every day to say, 'Would I come and take their bees?' My father caught the bee-fever of me, and I was very glad, as in him I had an able pupil and assistant. We, first of all, started to get hives put together, and in a short time we had several in readiness. They were made square with single walls to take standard frames, and so far have answered admirably. My first venture was in our own village. The sexton had three hives, and, as he was getting somewhat aged, had determined to give up keeping bees, so I had permission to take the lot. I started operations, my pupil taking his turn at the drumming, and we had a very successful drive, the bees going up splendidly, and we put the three lots together on one of the old stands, fed them, using one of Simmins' frame syrup feeders, and left them. In about a week all the combs were drawn out, stored, and sealed. The next bee-day was at a farm-house about two miles off in the next village, so I requisitioned a donkey and cart, and having got skeps, &c., together, started off with a boy to act as coachman. Here I found I had got somewhat a big job on, seven skeps to drive out of a total of eight, and my former assistant not present. To get it over as quickly as possible, as it was rather late in the afternoon, I pressed the boy into the service. He 'worn't' afraid of bees, and we soon had them tied up securely in our empty skeps. I despatched my coachman home with the load, took the honey out, and then sat down to a substantial tea with my friends in the farm-house.

This was a fair illustration of the succeeding days' driving, of which we had several, and drove in all about thirty lots without a hitch of any kind. We made of these eight stocks, and it was arranged that I should send four to my own home and leave the others behind. We thought matters over, and as we had no experience, and no advisers at hand, we had to make arrangements for the railway journey in the best fashion we could—and we evidently went wrong somewhere at this stage. Two hives were selected, the bees of which had been driven about a week, that had comb extended and syrup

stored, and the frame we fixed at top with wooden blocks, so that they could not move out of position, and the lids to all were arranged with a strip of perforated zinc let in along the centre for ventilation. These hives stood the journey very well, but the other two we selected contained bees that we had driven the day before my return. They were sent off in the morning by passenger train and arrived before I did in the afternoon, when I at once unpacked them, to find much to my disappointment that the contents of these two were thoroughly mixed up with broken foundation in a heap at the bottom of the box and dead as door-nails. Will some experienced bee-keeper kindly advise me the best way to pack driven bees for a railway journey, so as to be prepared for a similar campaign next autumn?

I forgot to say we varied our performance one day by trying to drive some bees out of a hollow tree. In this we were unsuccessful, as they would not leave; so we contented ourselves by taking out as much honey as the openings we could make with a chopper would allow us, and this weighed fifty pounds. The bees had been in the tree for years and were a very savage lot. We got plenty of stings for our honey.—W. J. S.

ONE SIZE SECTIONS—OVERSTOCKING.

[1613.] Every producer should of course study the wants of his own market, and govern himself accordingly. If two-pound sections are received with more favour by his customers, two-pound sections are the ones for him to use, no matter if one-pound bring a higher price in other markets; and so with other sizes. But to a great extent it lies largely in the power of the bee-keeper to decide upon one size or another of section, just as may suit his convenience, without protest from his customers. Anyone who has tried having different sizes of sections in his apiary at the same time need not be told that the nuisance is something like that of having different hives and frames in the same apiary. One year as a matter of experiment, I tried sections of five different sizes or widths, and part of them remained unfilled to annoy me for two years afterward.

If there were no other reason for uniformity there is a strong one in this, that supply dealers and manufacturers are more apt to have on hand a standard article, and if the bulk of bee-keepers use a section of a given size, manufacturers can make them up in large quantities at a lower price. They will feel safe in working ahead of the demand and getting a stock on hand. Whatever in this direction is for the interest of the manufacturer results in a lighter demand on the purse of the bee-keeper.—Dr. C. C. Miller (*American Apiculturist*).

Lectures on Bee-keeping.—On April 27th, at the invitation of a lady whose unobtrusive work is well known and appreciated in the parish of Upper Hatherley, Cheltenham, the schoolroom was filled with upwards of 200 people, bee-keepers and their friends, to hear a lecture by Mr. Slade, Hon. Secretary Gloucestershire B. K. A., on 'Apiculture, and how to make Bee-keeping profitable as well as interesting.' The lecture was illustrated by about sixty slides, with the limelight, showing the bee scientifically, and bee-keeping at home and in other lands; also diagrams, and hives, supers, extractor, wax-melter, and appliances used in bee-keeping. A table was laid out, exhibiting cakes and confectionery, from George, of Reading, honey drops from Huntley and Palmer, specimens of English and foreign honey, and chocolate, honey creams and tablets, from Messrs. Fry—all kindly contributed by the various manufacturers, which were much appreciated and enjoyed by those present. Rev. Mr. Griffiths opened and closed the meeting with a few kind and encouraging remarks. A similar lecture was given on the following Tuesday at the Workmen's Hall, Silver Street, Worcester.

'Reminiscences:' A Correction.—In the article last week entitled 'Reminiscences' (No. 1596, p. 201), there is a mistake which should be rectified. It is said: 'The first hive I ever saw was a large box hive.' Whereas it was not a hive at all, but a large box spouting, or cornice running all along the front of the house, and about thirty feet from the ground. This will explain 'The bees hanging out at one corner;' 'Placing a straw hive against the wall to catch a swarm;' 'Getting up a ladder, taking the honey out, and nailing up again.'—Lordswood.

Echoes from the Hives.

Welwyn, April 16th.—The weather is very trying, and everything is very backward, though I had drones on the wing from a very strong hive on the 9th.—Geo. J. Buller.

North Leicestershire.—Beautiful weather here last week, and bees flying and gathering pollen well, but the wind has shifted to east, and all is at a stand again, except feeding.—A. E.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

F. T. G.—*Moving Stock.*—Leave perforated zinc uncovered. It does not matter which time of day, morning or evening, so long as, if you elect the morning, it is *early* morn.

W. B.—1. *Rearing Queens.*—Unless you have capped drone brood now, it will be unwise to attempt queen-raising, and your better plan would be to wait the young queens you anticipate at swarming time, either uniting the queenless lot to another, or purchasing a queen for them. 2. *Clipping Queen's Wings.*—If they really persist, in spite of every precaution, then of course clip the queen's wings. 3. We believe Mr. Simmins sends out queens now with a guarantee of safe introduction. 4. *Cross between English Drone and Carniolan Queen.*—The first cross between Carniolan queen and black drone is excellent for honey gathering, but temper suspicious.

Enox.—1. *Commencement of Honey Flow.*—When you see the top cells of combs becoming elongated with white new wax. 2. *Doubling.*—See Cowan's *Bee-keeper's Guide Book.* 3. *Strengthening Stock.*—Commence stimulative feeding at once and shortly give a frame of brood from your strongest stock to weakest, so equalising the colonies. Treat the colony deprived of its combs as a swarm; you may get a little surplus from it. 4. *Lee's Sections.*—Full sheets of foundation can be fastened into other makes of sections, but in all the foundation is seen from the outside; this is very little, if any detriment. 5. *Cleaning Floor-boards of Hives.*—This should be done now. Lift hive off floor-board and place it upon a piece of calico, damped with weak carbolic acid solution, then scrape floor-board, afterwards replacing hive. Take floor-boards away quietly from other hives; little disturbance will ensue. 6. *Honey Harvest.*—Your main crop would be from sainfoin and clover. Unless your bees are very strong the fruit blossom will be too early. 7. *Cultivating Plants for Bees.*—It does not pay to cultivate plants specially for bees, the land in England being far too valuable, but if honey-producing plants can be grown that are usefnl as feeding stuffs for

cattle, &c., it will pay to plant them. In our own flower garden we plant 'bee flowers' as we must have flowers of some sort or other, and therefore discard all mediocre honey-producing ones. If we had a farm we should not plant red clover, but a honey-producing variety.

MALTA.—*Supers and Swarms.*—When a stock swarms, remove the parent stock to new site. Place the swarm on the original site, put queen-excluder on the frames (which should have starters only), take the supers off the stock, and place them on the swarm.

J. W. BARKER.—*Drone flying on April 8th.*—We should say the stock referred to is queenless, and should advise a close examination on the first *mild* day. (See 'Echo' from Welwyn.) Be very careful not to chill the brood should there be a queen.

WOOD GREEN.—*Skep not Filled.*—Considering the weather last season, your bees did as much as could be expected. Feed about quarter of a pint of syrup every evening. You will hardly get much of a honey flow in your locality till the limes come on in July.

J. F. CLEEVE.—*Bees vacating Hive.*—During spring it is not an unfrequent occurrence for colonies to vacate their hives and join others near. This is frequently the result of shortness of stores, but in your instance it is not so. The cause cannot always be traced. No doubt the colony was weak—strong ones never do so if they have plenty of stores—and the smell of the paint (turpentine) drove them away.

S. W. R.—1. *Queen Nursery.*—Any appliance manufacturer who is acquainted with the American system of queen-rearing would make you one. They are frequently used in America. 2. *Removing Queen before placing Nursery in Position.*—There is no necessity to do so. 3. *Virgin Queen Introduction.*—They can be introduced direct with even greater ease than when fertilised.

JOHN BAINBRIDGE.—*Bees fixed in Combs.*—During the winter a portion of the cluster has got separated from the main body, and has been prevented by the cold from joining them. They have thus, after consuming the stores near them, died from starvation and cold.

T. D. M., *Anwell, Burma.*—1. *Apis dorsata.*—We are not aware of any successful attempt to domesticate these rather pugnacious bees, but we should like to have a good try were we situated as you are; probably they would resemble the Cyprians in resenting smoke. Quietness and *nerve* would be essential.—2. *Apis Indica.*—We should think your stocks are queenless, judging by our *Apis mellifica*, or it may be you gave them so much food that the queen has nowhere to lay. Remove a centre comb, and the bees will soon build another, that is, presuming you have no foundation to put in. Do not fail to favour us with the opportunity of helping you in the future. Any notes on bee life and culture in your far-distant home would be appreciated.

H. I. A.—1. *Wiring Frames.*—You can use a centre bar as you suggest, but we should certainly prefer to remove it *after* getting the wire threaded in. There is no need to strain it so tight.—2. *Transferred Bees.*—Unless the weather becomes very much warmer, we should certainly wait the period you name before disturbing this stock. You put enough foundation.

ENQUIRER.—The shrubs and trees referred to are not of much use as honey producers, but some pollen is gathered from them.

W. F. A.—*Prevention of Swarming.*—For preventing colonies from swarming when arranged on the tiering-up principle, consult our *Guide-book*, p. 58, or our pamphlet on *Doubling and Storifying*.

CONSTANT READER.—*Best Hybrid.*—Try a cross between a Carniolan drone and a black queen. This makes a good honey gatherer of robust constitution.

R. CURTIS.—*Stock not Working.*—On the first mild day examine this hive closely, and note whether you can see the queen, whether there is any worker brood, and how the stock is for strength, and write to us again.

BEE-KAY.—*Uniting.*—Bring the hives to be united close together, about a yard a-day, reckoning only those on which the bees are flying freely. When the weather is suitable unite the lots, placing a piece of glass before the entrance so that the bees may note their new location. If you fancy one queen more than another the worse queen should be removed at the time of preparing the hives for uniting.

W. C. THOMAS.—*Syrup.*—We should not advise using syrup made last year, it would make 'assurance doubly sure' by making it afresh. Syrup should now be given rather thinner in consistency; and in average weather a quart weekly will generally be sufficient to keep a strong colony advancing.

H. W. T.—*Spring Dwindling.*—Spring dwindling is often attributable to too early and frequent manipulation and stimulating by giving food irregularly. The queen being in the condition you represent, it would be desirable to procure another stock and unite. By judicious feeding, and attention and care, a populous colony may be created by the arrival of the principal honey harvest.

ELLIS E. CRISP.—*Bacillus depilis.*—The bees have not reached us, but from your description we are inclined to consider that the bees are affected with *Bacillus depilis* or *Gaytoni*. We advise you to raise the hive slightly from the floor-board by means of small wedges, so that a current of air may pass beneath the combs. Feed also on phenolated syrup, and do not open the hive or attempt to manipulate. Under this treatment the colony may soon recover.

Wanted, a list of the honey shows or fairs, with dates and places of meeting, to be held in England during season 1888, with classes 'open' to the United Kingdom.—VIRGIN HONEY.

RECEIVED from F. M. Atwood, Rileyville, Saline Co., Illinois, his Catalogue and Price-list of apiarian supplies in general.

RECEIVED from Messrs. Abbott Brothers samples of honey labels. These are lettered 'Honey,' 'Pure Honey,' 'Heather Honey,' 'Irish Honey,' &c. These labels are very pretty, and the designs neat and appropriate. They will be found effective for their purpose. There is a large variety of them for selection. Well-designed labels add much to the attractiveness of honey.

Business Directory.

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BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BURTT, E. J., Strond Road, Gloucester.
EDEY & SON, St. Neots.
HOWARD, J. H., Holme, Peterborough.
HUTCHINOS, A. F., St. Mary Cray, Kent.
MEADHAM, M., Huntington, Hereford.

MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.
WALTON, E. C., 82 Emmanuel Street, Preston.
WEBSTER, W. B., Binfield, Berks.
WOODLEY, A. D., 26 Donnington Road, Reading.
WREN & SON, 139 High Street, Lowestoft.

HONEY MERCHANTS.

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BAKER, W. B., Muskham, Newark.
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HOWARD, J. H., Holme, Peterborough.
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STOTHARD, G., Welwyn, Herts.

HONEY GLASS MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
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VOL. XV. OF

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Editorial, Notices, &c.

FIRST-CLASS CERTIFICATES.

The annual first-class examination will take place on Thursday, May 17th. Candidates intending to compete are required to give notice to the Secretary on or before Saturday, May 12th.

ARE BEES WORTH KEEPING?

In some form or other the title of this article will be crossing the minds of the majority of our readers during the present season of apiculture. This subject can be viewed from so many and distinct points that, starting with such a wide basis, the enumeration of a few of the subjects of interest may prove of pleasure as well as profit.

First, we have the man who keeps bees for pleasure, eager to possess himself of any new race, anxious to try any fresh invention. Apiculture to such is a hobby, but this apiarian is of great use to the cause, as, money being of no object, his facilities for proving novel ideas enable others to know if this or that appliance possesses any real merit.

Secondly, we have the experimentalist, who loves his bees as a study, ever striving to advance science and acquire some fresh knowledge concerning the natural history of these most industrious insects, useful in a thousand ways to man. In these ranks from age to age have been found men who have devoted their lives and fortunes to the cause, teaching us the anatomy of the bee, pointing out the wonderful adaptation of this part of the insect for certain work, and that part for the advancement of the wonderful economy in nature, showing us the loving forethought of the Great Creator who fashioned all things, however simple or complex in their construction, for an all-wise purpose. From such men we know the habits of bees, their diseases and cure, their methods of collecting honey, and their power of transmitting pollen from flower to flower, insuring the fertilisation of blooms, providing for us a larger harvest of both grain or fruit than could have been obtained without their instrumentality. Thus true philanthropists have given to the world the results of their tedious experiments and laborious observations.

Thirdly, we have the agriculturalists and fruit-growers, who keep bees, not with the primary object of obtaining honey, or because they are particularly fond of bee-keeping, but because they have learnt from the experimentalist that no bees mean no fruit. It is now becoming a recognised fact that where fruit is cultivated to a large extent and bees are not kept in the vicinity an apiary must of necessity be added to the garden; and, profiting from the experience of our bee-masters, these apiaries have been made to yield profitable results in honey harvests.

Fourthly, we come to the class who form the greatest number of our bee-keepers, viz., those who keep bees to increase and help out their incomes; these are recruited from all classes of society: and we are glad to see the cottagers, profiting by the experience of their neighbours and the teaching of the Associations far and near, are now swelling the ranks of the advanced apiculturalist. To this fourth section of those who keep bees a few words of advice may here not be out of place. If you wish your bees to pay, and if you intend them to succeed, conduct your apiary on strictly commercial principles, leave the proving of new hives and new ideas to those who can afford it and have the time; depend upon it if they are worth anything you will soon hear of it. In the present day, with County Associations, shows, and Bee Journals, you can with patience reap the experience of others' experiments. Be careful, but do not have a hive because it is inexpensive; such may prove 'cheap and nasty.' Take full advantage of comb-foundation, and do not neglect feeding when necessary, as such a principle would prove false economy. Have only such appliances as are of actual service, avoiding such things as you can do without, as, if your bees are to pay with the present competition, the strictest economy must be observed.

A word here as to the width of section. Much is said and written about $1\frac{1}{2}$ and $1\frac{3}{4}$ inch sections. Before adopting these widths, be sure that they are the best. Our experience is rather in favour of the two inches; they are, without doubt, the favourites for selling honey in; many shops absolutely refuse to have anything to do with the narrower. Two or four bee-ways are a matter of opinion and choice, as right-angled and parallel frames are; both have their strong advocates, as well amongst scientific as with practical bee masters.

Fifthly, and lastly, we come to the man who

makes bee-keeping a speciality, devoting his entire time and attention to their management, making apiculture his sole source of income, either by selling swarms and queen-raising, or working his apiary exclusively for the production of honey; or else, when circumstances permit, he may include all three in his scheme.

We have thus briefly traced the five different reasons 'why people keep bees;' from which it is easy to reply that bees are worth keeping. As a hobby and a study the pursuit will ever abide; but as a source of income the industry must ever continue to advance. Large apiaries are the rule in America and Canada, but with our changeable climate we do not consider that such undertakings will be greatly adopted by us. Apiaries of from ten to fifty hives will pay in the British Isles when worked as aids to incomes. Honey is steadily taking its right place as a household requisite: it was, of old, considered man's proper food. Some authorities inform us that Pythagoras the philosopher used to be contented with honey and the honey-comb and bread.

BRITISH HONEY COMPANY.

We very much regret to announce that we have received a circular intimating that a meeting of the above Company will be held at Charing Cross Hotel on May 10, when the following resolution will be proposed, 'That it has been proved to the satisfaction of the meeting that the Company cannot, by reason of its liabilities, continue its business, and that it is advisable to wind up the same voluntarily.'

ASSOCIATIONS.

BRITISH BEE-KEEPERS' ASSOCIATION.

Meeting of the Committee held at 105 Jermyn Street on Thursday, the 26th ult. Present—Rev. Geo. Raynor (in the chair), Rev. F. T. Scott, Rev. R. Errington, Captain Campbell, J. M. Hooker, W. O'B. Glennie (Treasurer), and the Secretary. Letters were read from Captain Bush, Rev. E. Clay, Dr. Bartrum, and the Rev. J. L. Seager, regretting their inability to be present. The finance business and the Secretary's correspondence having been considered, the Exhibitions Sub-Committee reported that they had held a meeting previous to the General Committee Meeting, and had resolved that the following arrangements be made in respect to the awarding of prizes to members of the B. B. K. A. at the county shows of the affiliated Associations:—(1.) That priority be given to those counties which had made the earliest application, subject to suitable arrangements. (2.) That two classes be arranged, one for comb honey in small sections, and one for run or extracted honey, with two prizes of 12*s.* 6*d.* and 7*s.* 6*d.* in each class. (3.) That the exhibits be subject to the B. B. K. A. Exhibition rules where they applied. (4.) That no competitor be allowed to take more than one prize in each class. (5.) That an entrance-fee of one shilling and sixpence be made for each entry, the entrance-fees to be handed over to the funds of the County Association. The report of the Exhibitions Sub-Committee having been considered, it was approved and adopted.

In the absence of Dr. Bartrum, who had placed the notice on the agenda paper, it was resolved, 'That copies of the reports of the quarterly meetings and papers read be forwarded to each member.'

A meeting of the Educational Sub-Committee, called for the purpose of considering some modification of the rules relating to third-class examinations, could not take place. Only one member was present, the remainder being absent through illness.

The next meeting of the Committee, also the quarterly meeting of County Representatives, will take place on Thursday, May 17th.

LOWESTOFT BEE-KEEPERS' ASSOCIATION.

The annual meeting of the members of this Association took place at the Public Hall on Thursday, April 26, when the following report was presented by the Hon. Sec., L. Wren:—

'The committee are again able to present a very satisfactory report and balance sheet for the year 1887.

'There are now forty-five members against forty-six last year. The year closes with a balance in hand of 6*l.* 12*s.* 5*d.*

'It was resolved at the last annual meeting not to hold an exhibition during 1887; but in lieu thereof the members to have two visits from the expert, viz., spring and autumn. In accordance with that resolution, the expert visited the apiaries of members during April and May, examined 159 stocks, giving advice and assistance where required. The visit was repeated during September and October, when 162 stocks were examined and put in order for the winter.

'It has been a long and trying winter for bees, and many stocks have died, some from starvation, others through old worn-out queens. All stocks need great attention just now where they are strong. Much food is consumed in rearing brood, and it will be some time before the bees will gather sufficient to supply their daily needs.'

The report and balance-sheet, showing a balance of 6*l.* 12*s.* 5*d.*, were unanimously approved and adopted. The following committee for the ensuing year were unanimously re-elected:—Rev. T. A. Nash, Rev. C. T. Scott, Mr. S. Cox, Mr. R. J. Colman, Mr. J. L. Clemence, Mr. G. S. Everitt, Mr. K. Rix, Mr. L. J. Peto, Mr. F. Morse. Mr. L. Peto was also elected chairman for the year. Mr. L. Wren was re-elected as honorary secretary, expert, and treasurer.

It was also thought advisable that in connexion with the Blundeston and Corton Horticultural Shows prizes should be offered for cottagers, and it was resolved there should be two classes of prizes as under:—1st. For the best exhibition of honey in the comb, taken without destroying the bees. 1st prize, 5*s.*; 2nd, 2*s* 6*d.* 2nd. For the best exhibition of extracted or run honey, in clear glass bottles or jars, taken without destroying the bees. The honey should be exhibited in a saleable form. Any exhibitor destroying the bees to take the honey will be disqualified.

The proceedings then terminated.

MIDDLESEX BEE-KEEPERS' ASSOCIATION.—SOUTHGATE BRANCH.

A general meeting of the Southgate Branch of the Middlesex B. K. A. was held in the Village Hall, Southgate, on April 25th, 1888. Chairman, Mr. H. Matthews. The Hon. Sec. and Treasurer (P. P. Hasluck) reported that up to date 6*l.* 10*s.* 6*d.* in subscriptions from sixteen members had been received, of which sum 6*l.* 9*s.* 6*d.* had been paid over to the Provincial Secretary, leaving 1*s.* in hand. The show for the N. E. division of the county was held in the grounds of P. P. Hasluck, Esq., The Wilderness, Southgate, on the 20th August last. In spite of the bad weather the attendance was fair. Southgate branch was well represented at the show, and the B. B. K. A. medals were awarded to Mr. J. H. Bolton and Mr. P. P. Hasluck respectively. The autumn tour

conducted by the expert-in-chief to the B. B. K. A. (Mr. S. J. Baldwin), was, on the whole, satisfactory. Three cases in all of foul brood were reported, of which one was so far advanced that the expert recommended its destruction; his suggestion was carried out. The Association appears to be making way in the district, and the Secretary has strong hopes of a considerable addition to the number of members during the coming season.

ESSEX BEE-KEEPERS' ASSOCIATION.

Spring Visits.- The expert is working, as weather allows, near home, but has been constantly stopped by the continued cold and wet. Distant journeys are left last for the sake of longer days.

Cottagers' Apiary Competition.—Notes will be taken on spring visits of the stocks in cottagers' apiaries, so that results may be judged on autumn visit for the prize of 10*s.* offered by Mr. Ed. Durrant for the best-kept cottage members' apiary giving largest returns in comparison with the number of hives kept.

Hives for Cottagers.—To encourage labourers and cottagers now using skeps to purchase bar-frame hives, Mr. Bevill has generously placed a sufficient sum at the disposal of the Association to enable the purchase of six hives at 12*s.* 6*d.* each, to be delivered to cottage members recommended by the expert as sufficiently advanced in bee-keeping, and unable to purchase unaided. The cost to be repaid by anyone who takes a hive, as he can make it out of the honey produced in the hive so purchased. A recognition, in the shape of a section or bottle of honey, to be made yearly by each purchaser as long as any portion of his amount remains unpaid.

County Show at Ilford, June 28-29.—F. H. Meggy, Hon. Sec., *Chelmsford.*

Selected Query.

[7.] *What is the best thing to do with queenless colonies in spring? Should they be united to those having queens?*

In the afternoon of a fine day, on which the bees have been flying, move the queenless colony close up to another having a queen, for the purpose of their being united. Give both a little smoke and jar the hives a few times. After waiting a minute or two to allow the bees time to fill themselves with honey, take off the quilts or covering, remove the frames of comb with the bees on them from the queenless colony, and alternate them with the frames in the other hive. Any bees remaining on the sides or bottom of the hive should be shaken on to the frames before putting the quilts on, when a little more smoke may be given at the entrance. A feeder filled with syrup can be put on for a few days. If the queen is a valuable one, and the bees are bad-tempered, she should be caged; but this is not generally necessary.—John M. Hooker.

United. Yes. — John H. Howard, *Holme, Peterborough.*

If a colony lose its queen in March or April unite the bees to the next hive, and let the hive stand midway between the original position of both hives. The uniting had better be done as follows to prevent fighting:— Shake both stocks of bees into a straw skep, or on a wide board or cloth, in front of the hive you intend them to occupy, and as they run in together sprinkle them with some very thin syrup with a few drops of peppermint in it; it is also a safe plan to cage the queen for twenty-four hours. But if a colony should lose its queen in May and there was a fair lot of bees, I should give them a frame of brood containing eggs from a good working stock and let them raise a queen.—W. Woodley.

Queenless colonies in spring should be united to moderately strong colonies which possess queens.—H. Wood, *Lichfield.*

If the queenless colony in spring be a weak lot it should be united to another stock having a queen, as they are hardly worth looking after. Or should the colony be queenless and still strong in bees, at end of April or beginning of May a frame of brood may be given to it from another stock to hatch a queen, provided, also, that precaution be taken to have drones flying at the time for successful mating. In most apiaries will be found in spring one or two stocks having a young queen with few bees. When a stock is found to be queenless, these small lots with queen may be united to queenless colonies; this I believe to be the best way.—William McNally, *Glenluce, Scotland.*

Unite by all means.—Wm. N. Griffin.

Unite them to other stocks near, except they are very strong in bees; then, if any queens be obtainable, give them one by caging from twenty-four to thirty-six hours. — John Walton, *Honey Cott, Weston, Leamington.*

Either unite to those having queens, or unite two or three queenless colonies after introducing a queen.—W. B. Webster.

If queenless recently, I should regard it as no great evil, particularly if bees covered four frames; give a frame containing eggs from queen whose good qualities have been proved, and proceed in usual manner with cells. It frequently happens that stocks are queenless earlier; if strong, should proceed as above and protect the nucleus by artificial heat. Do not regard uniting early in year as advantageous, and only practise it as a last resort. By this method I have queens now ready to fly, and can thus practise 'select' rearing.—John Edey, *St. Neots.*

I think so.—W. E. Burkitt.

This depends upon circumstances. If the colony is large enough to cover four or five standard frames, and a nucleus headed by a last year's queen is available, unite the latter to the former, caging the queen for twenty-four hours. Of late years I have wintered nuclei of three and four standard frames, and find them very useful at spring. Colonies, populous and headed by young queens, when put into winter quarters well prepared, will rarely be found queenless at spring. Failing a queen, union with another colony is the only alternative.—George Raynor.

Nothing is gained by uniting strong colonies. Take a queen, if good, from a weak lot, and then unite latter stock to one near it, should the weaker lot not stand near the queenless hive.—Samuel Simmins.

Foreign.

THE EAST COAST OF FLORIDA.

The usual winter losses of bees in the Northern States cause many apiarians to turn their thoughts to Florida, believing that in this sunny land, where flowers are blooming the entire year, there would be a field open for the enterprising apiarist which, if occupied, would result in satisfactory returns for the trouble and expense that might accrue in removing to so favoured a locality. There have been good reasons in the past for the inquiring mind to dwell upon this subject, as the apicultural journals have contained numerous reports relative to this and other localities, as especially favoured by nature for the production of honey. Believing there are other localities in the State that are suitable for establishing apiaries with a fair prospect of success, it is not necessary in this article to make any reference to them, but rather confining the subject to the locality

embraced in the mangrove district of the eastern coast of the State, of which New Smyrna has long been considered the centre. With the exception of St. Augustine, it is claimed to be the oldest town in the State, and one of the last to receive the benefits derived from railway transportation, and as a consequence has been deprived of its share of emigration compared to other portions of the State.

Previous to the freeze of January, 1886, this locality was considered to be a most desirable location for securing large yields of honey. The mangrove flourishes for miles up and down the river, and in the season of its blooming the amount of honey secreted was sufficient for thousands of colonies. The bee-keeping industry began to attract the attention of specialists, quite a number of whom possessed flourishing apiaries numbering from fifty to two hundred colonies and over. After the freeze, which killed and blighted from seventy-five to ninety per cent of the mangroves, a feeling of despair secured a firm hold on many of the bee-keepers, and they either sold out or removed to more promising localities. To those who remained the future proved anything but encouraging. The lack of honey to subsist the colonies upon caused many to die of starvation, and a general indifference to the result was common. Bees have been shaken upon the ground, the honey extracted, and the combs melted into wax in order to secure a portion of the amount invested in them by their owners previous to removing. The result is, there are at the present time but one-third to one-fourth as many colonies here as were in the fall of 1885, and to the best of my knowledge, no one is relying on their apiaries exclusively for a subsistence. There are individuals here who desire to dispose of their apiaries; others who realise if the impression goes abroad that apiculture is a failure, it will prove disastrous to the disposal of their real estate. It is from persons of this character that the misleading reports emanate that are seen in the Northern bee journals. The season of '87, like the year previous, has proven a failure, the colonies barely securing sufficient to winter upon, but not a few of the bee-keepers have extracted at the rate of from fifty to eighty pounds of honey per colony. The result at present is the bees are either starving or are being fed at much trouble and loss to the owner. While this is transpiring, the Northern bee-keepers are reading of a third of a crop in this locality, of nine barrels of honey from forty-five colonies, and reports of a like nature, which are intended to mislead for reasons mentioned above.

Possibly many who peruse this article may inquire in what way does apiculture differ in Florida from what it does in the North, and if the absence of winter is a benefit to the apiarist? Replying to the first, can say so far as my opinion on the subject is concerned, The only feature that is identical in both localities is the *instincts of the bee*. Of the second, the best interests of the colonies are only secured by the constant vigilance of the apiarists during the winter months. The climate, the humidity of the atmosphere, the variety, time, and duration of the blooming of the flowers, must be familiarised. The fact that colonies require about thrice as much honey to keep them in an active condition, the necessity of strong colonies to secure surplus, and, unless they are destroyed at the close of the season, the increased amount of bees are of but little value except to consume honey. The prevalence of the musquito hawks renders queen-rearing extremely uncertain at times; the moth-worm, active at all seasons of the year, makes the preservation of combs extremely difficult. The ease with which robbery can be started during a dearth of honey, and the persistence of the bees in keeping it up, are among the many objectionable features of the profession. Our honey is also liable to ferment if not given the best of care, and the result is sometimes the bursting of the barrels while undergoing transportation. Another great detriment is that our best grades of honey, known as 'mangrove' and 'palmetto' honey, are classed in the Northern markets as Southern honey, which reduces it to the level of the strained product of Georgia and other Southern States, greatly to our disadvantage. Had the interests of Florida apiculture been taken into consideration by the representation of the national society during the past four years, instead of seeking to promote personal aggrandisement, a better state of affairs could have been reported, notwithstanding the many disadvantages under which we have laboured during a portion of that time.

It will be seen that with the many desirable features of this location, among which are an enjoyable climate, the natural food resources of the country, and an almost perfect exemption from diseases, there are objections here as well as in other States.

Honey production in the Northern States is more profitable and requires less labour than in this locality, and there is not the least doubt that it is so over the entire State. Our home market is comparatively nothing to what is possessed by the apiarists of the North, except in some favoured localities near the large cities. The winter problem, or the loss of colonies, is not taken into consideration as in the North, if the colonies have not been deprived of their stores, and the ambition to secure a large yield of honey has ruined many a promising colony of bees.

The future prospects of this locality appear to be good, as the new growth of mangrove secreted a small yield the past season, and it is expected the yield for 1888 will enable all to secure a full crop.

Through the solicitation of a number of the more prominent apiarists of this locality, the North American Bee-keepers' Society have been induced to appoint Professor G. W. Webster of Lake Helen as the Vice-President for Florida for that Society for 1888. Having an extended apicultural experience in the State of Iowa, and also in this State, coupled with his reputation as a botanist of distinction, fits him to a great degree for the position which he now holds, and all interested can rest assured that no visionary or misleading article on Florida apiculture will emanate from his pen. The above description of our honey interest and the condition of affairs pertaining thereto, are as near the true facts of the case as circumstances will warrant in asserting at the present time.—JOHN Y. DETWILER, *New Smyrna, Florida, January 4th* (*American Gleanings*).

JOTTINGS BY AMATEUR EXPERT.

'Mel Sapit Omnia.'

'What a time since we saw that!' 'X-tractor' will say. The truth to tell I have two or three things to write about, so I thought I had better 'run up the old flag' and do it.

The first is 'honey boards.' I need not assure our faithful monitor 'Useful Hints' that I had seen the article written by Mr. Heddon to the *C.B.J.* that he ('U. H.') has classified as 'amusingly satirical,' nor that I know a good *quid per quo* for Mr. Heddon. Unlike 'U. H.,' I took that article as intentionally offensive, and on principle I answer such with silence, however much I should have enjoyed to break a lance with our 'invertible' friend over the water. But I started to write about 'honey boards,' not about Mr. Heddon, and what I should like 'Useful Hints' to tell us is, why he wishes us to use honey boards? By our present methods of working with young queens at the head of our colonies, and expansive hives allowing us to give room as required, I can get sections without the queen attempting to lay in them *without a queen-excluder* far easier than I could do with the zinc in position. I do not get two per cent of my sections laid in without an excluder, and am never troubled with pollen in sections, consequently

I consider it scarce worth while to give the bees unnecessary trouble for the sake of what, under the circumstances, can only be classed as a 'fad.' I get more brace-combs than I like. If 'U. H.' can tell me how to still further reduce them, I shall be pleased to listen if he thinks he knows of a more excellent way than I have tried, and accord to him the thanks he will merit.

The next is the word 'blizzard.' 'Useful Hints,' on page 163 *B.B.J.*, gives the Americans the credit for coining the word on the strength of Nuttall's Dictionary. 'Right here' let me say that a very large number of the quaint, and to us, witty expressions, used by our cousins over yonder, are simply very old English ones, long since forgotten by most 'Britishers,' whose language is being so constantly affected by importations from the Continent. In reading, as I often do, newspapers published in small rural towns in the States, the similarity of many expressions used in rural districts of the States to others used in West Cornwall often strikes me, living as I did for many years in 'West Barbary.' (West Barbary, allow me to explain, is that portion of Cornwall lying west of Truro, and witty, humorous expressions is the hall-mark of a native.) Rural districts, far removed from the centres of civilisation (?), are always the last to be affected by change, and phraseology is no exception to the rule, especially previous to the days of School Boards. I do not claim the word 'blizzard' as a Cornish one, but here is what a correspondent writes about it to *Notes and Queries*: 'The word "blizzard" is well known through the Midlands, and its cognates are fairly numerous. I have known the word and its kin fully thirty years. Country folks use the word to denote blazing, blasting, blinding, dazzling, or stifling. One who has had to face a severe storm of snow, hail, rain, dust, or wind, would say on reaching shelter that he has "faced a blizzer," or that the storm was "a regular blizzard." A blinding flash of lighting would call forth the exclamation, "My! that were a blizzomer!" or, "That wor a blizzer!" "Put towthry sticks on th' fire, an' let's have a blizzer" —a blaze. "A good blizzom"—a good blaze. "That tree is blizzared"—blasted, withered. As an oath the word is often used, and "May I be blizzered" will readily be understood.'

A Bee-keeper in Prison.—Here we must 'haul down the flag' to the Yankees. We have 'invented' nothing like that as yet in this fossilised old country. Mr. L. A. Clarke, of Arkadelphia, Arkansas, U.S., is in prison for contempt of court. A neighbour indicted his bees as a 'nuisance,' and Mr. Clarke was ordered to remove them beyond the corporate limits of the city. He refused, and was put into 'durance vile.' Mr. Newman, the editor of the *American Bee Journal*, who is also manager of the North American Bee-keepers' Union, is making strenuous efforts to raise 500*l.* to defend the case. If this is a sample of local government in the 'land of the brave and the home of the *free*,' save us from such local government!

The *B. B. J.* of last week and the American *Bee-Hive* for April came by the same post. I looked at the *Bee-Hive* first, and on turning to the *B. B. J.* discovered that the scraper illustrated by our friend the 'X-Tractor' is shown in the *Bee-Hive* also, but the latter has the advantage of cheapness. This is what the *Bee-Hive* says:—'We are using a scraper for scraping separators, hive bottoms, &c., made by drilling a hole in the centre of a mower "section," and putting on a handle with a screw. Try it, and you will cry, "Eureka!"' A section that is worn out for mowing will answer the purpose admirably. Almost every village smith throws quantities of them annually on the scrap-heap, so no one need be without a scraper; or, failing to get one there, come and fetch one from the scrap-heap under the 'chestnut-tree' of—Amateur Expert.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

COUNTY ASSOCIATIONS.

[1614.] The Secretaries of County Associations have no light duties to perform to keep the Societies going, and I am sure we are all greatly indebted to them for the labour and time they bestow in the interest of apiculture. In these times of apicultural and general depression it is most difficult to get the support that the societies have a right to expect, and there is great trouble in getting in subscriptions and keeping up the number of the members.

In addition to this, it appears that in some counties the secretaries are complaining that they cannot get their managing committees to attend the meetings, and that they have to do all the work themselves.

I feel that I am guilty of not having attended the meetings of the committees of the county of which I am a member, and I am sorry that this is so. I will tell you the principal reason, and it is not unlikely that others have been absent from similar causes. In my case the meetings have been called by the secretary—very properly no doubt—at towns which are at a considerable distance from me, the journey there and back taking up a whole day; this, the railway fare, and other expenses, are more than I can afford. It is difficult to see how this can be obviated, as the committee are generally chosen from different parts of the county: some on account of the known interest they take in apiculture, others on account of the position they hold in the district; and wherever the meetings are held, the majority would have a considerable distance to go.

This will, I think, be the case in all the counties, and I would suggest that as soon after the appointment of the committees as convenient, the secretaries should send a letter to each member of the committee for the purpose of ascertaining, first, the day in the week that would be convenient, and the particular day preferred, and the time of day; second, what places or towns they could attend, and which they would prefer. The secretaries would then be able to select the day in the week and the place most convenient to the majority, and in this way would, in all probability, get a better attendance.

This is the way the meeting of the committee of the British Bee-keepers' Association is arranged.—John M. Hooker.

THE DRONE.

Our Poor, Slandered Drone asks for his Day in Court.

[1615.] 'Virgil, who was a great poet, but not enough of a practical bee-keeper to know a laying from a virgin queen, was the first writer of much note to have his fling at me. To him I was only an idle knave, born to consume the fruits of others' labours, and deserving no better fate than death, by ignominious expulsion from the industrious commonwealth. Ever since he so grossly libelled me, to compare one to a drone is the most orthodox form of denunciation for laziness, gluttony, and what has been called "general cussedness."'

Now I am proud to say to this Court, that I can disprove every charge brought against me by simply proving that, to the best of my ability, I fulfil the express object for which I was born. Surely no creature can do an better than this, and excuse me for thinking that few men do as well.

CHARGED WITH LAZINESS.

If any of my enemies had authority to call the roll of my demerits, he would surely begin by accusing me of being too *lazy* to gather any honey. But an expert in points of this kind could remind him that if he examines my proboscis, he will see that it is much too short for sipping nectar from the opening flowers.

MAKES NO WAX.

I am free to admit that I make no wax, but even Cheshire himself, whose microscopes have fairly turned me inside out, will tell you that I have not a single wax-secreting gland, and am also without those plastic, trowel-like jaws, which enable the worker-bees to mould the wax into such delicate combs.

GATHERS NO POLLEN.

Now do not insinuate that I might at least employ some of my leisure time in gathering pollen? Can you not see that my thighs have no basket-like grooves, in which it could be packed, and are quite destitute of the hairy bristles by which the workers hold the pollen in place?

ACCUSED OF BEING A LAZY COWARD.

No doubt you have often denounced me as a big, hulking coward, that leaves to the women the whole defence of the State. Are you not aware that I have have no sting to fit me for acting on the offensive? Would that I had one proportioned to my bulk! if only that I might make proof of it upon all who berate me for not accomplishing impossibilites!

I am not at all ashamed to admit that I spend the most of my time not given to eating, either in sleeping, or in what you are pleased to call listless moping about the hive. Has it never occurred to you that if I should try to assume the restless activity of a worker-bee, I could be nothing better than a meddlesome busybody, perpetually interfering with the necessary business routine? I guess the silly meddler who would put me up to such nonsense ought more than once to have had a dish-cloth pinned to his rear, to teach him not to bother the women in their work!

MISUNDERSTOOD.

I am sorry to number Shakespeare among those who have misconceived me, by calling me 'the lazy, yawning drone.' But as one of my maligners have likened me to Falstaff, I may be allowed to quote in my own defence what this great braggart, when accused of cowardice, says of himself to the Prince: 'Was it for me to kill the heir apparent? Why, thou knowest I am as valiant as Hercules; but beware instinct; the lion will not touch the true prince. Instinct is a great matter; I was a coward on instinct. I shall think the better of myself and thee during my life. I for a valiant lion, and thou for a true prince.' I lie not, like the false knight, when I say that what you call my laziness is a matter of pure nstinct.

With all your boasted reason you seem to have entirely overlooked the doctrine of the conservation of forces. You upbraid me with consuming so much of the precious honey, to the gathering of which I contribute nothing! Well, if I made a single uncalled-for motion, would not that necessitate an extra consumption of food? What better can I do, then, than to keep as quiet as possible? There is nothing either inside or outside of the hive which calls for any other line of conduct until the young queens are on the wing, and as they do not sally forth until long after noon, why should I go abroad any earlier? I can assure you that if bridal excursions were in order as many hours in the day as the flowers secrete honey, no worker would ever be earlier to rise, or later to go to bed, than myself.

MISREPRESENTED.

I, an idle, lazy, listless lounger, forsooth! Does any one wish to witness the most perfect embodiment of indefatigable activity? Let him then look at me, when at the proper time, with an eager, impetuous rush, and a manly, resonant voice, I sally from the hive! See with what amazing speed I urge, what our old friend, Samuel Wagner, called my '*circumvolating*' flights! For aught you know I may cover greater distances in describing these vast circles than the busiest worker in the longest summer day. There is great need, then, that I should be abundantly provisioned for such exhausting excursions, and it is only a law of nature that on my return from them all that I carried out with me should be found to have been used up. If you taunt me either for the full or the empty stomach, I merely ask you if you have never heard of honeymoon trips among your own people, which began with extra-full purses, to end only with uncomfortable light ones?

SAVAGE DELIGHT OVER MY DEATH.

To cap the climax of your abuse, what savage delight you take in seeing the workers drive me from my pleasant home! And how glibly you can moralise over what you call a righteous judgment upon a life spent in gluttony and in glorious ease! Just as if you did not know that the whole economy of the bee-hive is founded on the strictest principles of utilitarianism. Is not a worker-bee, when disabled by any accident, remorselessly dragged out to die, because it can no longer contribute to the general good? Even so exalted a personage as the queen-mother herself, as soon as it is plain that her fertility is too much impaired, she has a writ of *supersedeas* served upon her, in favour of one of her own daughters.

Knowing well the law under which I was born, I urge nothing against being put to death when Shakespeare's 'pale executioners' deem the day of my prospective usefulness to be over. Truly the sword of Damocles is suspended over my head, and from the hour of my birth till that of my death it may fall at any moment. Many bitters are thus mingled with my sweets.

I have time to mention only one more. While I know that most of the young queens come safely back from their wedding excursions, I cannot help sometimes foreboding the worst when I see that no drone ever returns to tell us of his experience.

APPRECIATED BY BONNER.

I will close my defence by reminding you how the good father of the great Scotch bee-keeper, Bonner, showed his appreciation of our persecuted race. It was his custom to watch every year for the first flying drone. Its cheerful hum so filled him with delight, as the happy harbinger of approaching swarms with their generous harvest of luscious sweets, that he called an instant halt on the work of his busy household, and devoted the rest of the day to holiday feasting. The patron of the drones ought forever to bear the honoured name of 'Saint Bonner.'

THE DECISION OF THE COURT.

Sir Drone:—This Court having heard your defence, declares it to be a true and manly one, all those to the contrary notwithstanding, who would further injure you by calling it nothing more than crafty, special pleading. It only regrets its want of power to punish adequately your slanderers. But, alas, my worthy fellow! you must not expect too much from this acquittal. Remember how difficult it is for Truth to overtake a Lie that has got a start of only a single day. No doubt the

time will come when those who have been stigmatised as the

'LAZY FATHERS OF THE INDUSTRIOUS HIVE'

will be held in due honour by the world; therefore console yourself with this bright hope for the future of your race, while you protest against the lies that have had so many centuries the start of your true story, that you may well despair, in your short lifetime, of ever overtaking them.

MORALS FROM THE DRONE'S PLEA.

It were easy to draw more than one good moral from the drone's plea, such as, 'Do not give even a dog a bad name, unless you are quite sure he deserves it;' but the moral which I think at the present time can hardly help suggesting itself to well-read bee-keepers, may be very fairly styled the

MORAL OF THE PROF. WILEY SCIENTIFIC-PLEASANTRY LIE.

It is only too well known, to the sorrow of most of our large honey-producers, that some years ago Professor H. W. Wiley, an entomologist in the service of the Government at Washington, published substantially this statement, viz.: That honey-combs, after being manufactured, filled with glucose, and sealed over, all by human skill, so nicely as to escape detection, are largely sold as genuine bees' honey; when the bees have had nothing to do with a single step in the whole cheating process. This absolute falsehood having got a good start, as coming from a *scientific man* (?), has widely, at home and abroad, prejudiced the public against buying the purest honey in the most beautiful combs.

Many times have I heard the above story spoken of as either undoubted truth, or have been asked if it were not the truth. It has been refuted again and again, and large sums of money have been offered by responsible parties to any one who will produce even a small specimen of such a man-made product; and yet the story is constantly appearing in print in America, Europe, and not long ago even in Australia. It has found its way into a periodical of as high repute as the *British Bee Journal*, and it sometimes seems to have a greater vitality *for mischief* than when it first started out on its hurtful career.

Professor Wiley, when called to account for fabricating such a story, thought it a sufficient excuse that he meant it only as a '*scientific pleasantry*.' Could any one wish him a harder task than over his own signature to try to stop the march of such an inexcusable utterance? Could there be a stronger condemnation of his conduct in this matter than the words of Holy Writ?—'As a madman who casteth firebrands, arrows and death, so is the man that deceiveth his neighbour, and saith, Am I not in sport?' Prov. xxvi. 18, 19.—L. L. LANGSTROTH, *Dayton, O., March 8th.*

BIRDS AND FRUIT TREES.

[1616.] I was truly sorry to see the letter from J. Hiam on 'Birds and Fruit Trees;' the gentleman is not content with destroying bullfinches himself, but wishes others to do the same. I am happy to know there are some human members of Parliament who are trying to put a stop to the catching of wild birds during breeding season. I read in the Old Book that God made the firmament and the fowls to fly in it, and God pronounced *all* very good, which must include birds as well. Now some men seek to destroy the beautiful plumaged songsters, which enliven the fields and woods of merry England, but I may venture to say in my humble opinion, that the country would lose one of its sweetest charms were our little feathered friends absent.

Mr. Hiam goes on to say the blossom of peach and plum trees have been a great loss to his bees. I have been a bee-keeper for a good many years and my father before me, and I venture to assert, a hive of bees could not support themselves from peach and plum blossom, if they had not other stores; even if bullfinches do harm, they make up for it during the rest part of the year. I do not wonder at the birds coming when he had a call bird to allure them, doubtless many visited him that would not have done so; if he had some small bells in the trees and attached string and set them ringing when the birds came they would soon have decamped, or better still, could not nets be used to prevent mischief. I sincerely hope and trust no bee-keeper will follow his example to destroy the poor birds, but to rather copy the example of the great and good Lord Shaftesbury, who thought it not beneath him to feed them during the hard, frosty weather. Who being dead, yet speaketh to us all, lessons of kindness and love.—T. HILL.

LOCATING THE APIARY—BEST HIVE—BEST BEES FOR ALL PURPOSES—WINTERING BEES—SPRING MANAGEMENT.

[1617.] Nearly all, if not all, the older bee-keepers have laboured under the disadvantage of having commenced the pursuit of bee-keeping at the place where they were located at the time they received the first stroke of the 'bee fever.' This made the business of bee-keeping very uncertain with many of them, to say the least. Let me illustrate this point. My location has a good white clover range for bees, and this is the main source for surplus in all the older states; but my location is surrounded by a closely cultivated district, and a nice state of husbandry. All weeds are cut from the pasture lands and waste places, and my bees are deprived of fall pasture except from heart-ease (smartweed) which flourishes only in wet seasons. Hence I must feed my bees in the fall more or less, and this is a heavy draw on the profit side of the account kept with the bees. Some years ago I advi-ed a friend of mine to start an apiary at his place—he lived but seven miles from me—as he had about the same white clover range that I had and the hills about him were covered with the little white and purple asters which would supply his bees with winter stores. He took my advice, and time is proving that his location is twenty per cent better than mine on account of the waste lands about him which abound with fall honey-producing flora. Let us pause here and take the 'hint' that the difference in a good and a poor location may make all the difference between success and failure.

THE HIVE BEST FOR ALL PURPOSES.

My views on this subject are not radical. The bee-literature of the past clearly shows that men have succeeded well, and equally well, who have used hives that differ as much in construction, as any of the new hives differ from the old ones and from each other. These facts are a broad 'hint' to the honey producer, that the difference in hives is not so great as many profess to believe. Any good moveable frame-hive, by the application of a little ingenuity, will give satisfactory results. I will not consume space by discussing this point here, as a description of my favourite hive has already been given in your pages. If the hive is light and substantial, and capable of being 'tiered' to the best advantage, without giving too much room at one time, no other hive, no matter how costly or complicated, will beat it. The 'tiering up' system is essential to the largest yield of the best quality of honey, and I believe the best way is to *tier above* the brood department of the hive.

THE BEST BEES FOR ALL PURPOSES.

It is generally conceded that Italian bees are the best bees for all purposes. But as it requires time and money to keep the race pure in any vicinity where there are

black bees we are induced to say that Italians and the first cross between them and black bees make a strong working apiary. But all subsequent cross with hybrids should be avoided. Such crosses have never failed to be inferior to the first crosses, in my apiary.

WINTERING BEES ON SUMMER STANDS.

To winter bees safely on the summer stands the apiarist should study the climate of his locality and prepare his bees for winter to suit his climate. But there is one condition in wintering bees that is common to every place, and that is plenty of winter stores. This I discovered years ago when transferring bees from box-hives. I found that plenty of honey in the box-hive means a strong colony of bees, and light stores always brought through the winter a small colony of bees. Bees do not waste and dwindle away when surrounded with an abundance of honey as they do when their stores are limited. We may take a 'hint' here and have strong colonies in the spring, if disease does not overtake our bees in their long winter confinement.

SPRING MANAGEMENT OF BEES.

I want my bees to have such a bountiful supply of stores that they do not have to be disturbed in the early spring till they begin to gather honey and pollen from the early bloom. After this no harm will come from any necessary manipulation. All upward ventilation through absorbents or otherwise should be prevented as soon as spring breeding commences. Bees will manage any accumulation of moisture at that season of the year. In fact they need water to carry on breeding and must have it, if they have to carry it from a distance. The surplus cases should go on the hives as soon as the weather will admit with safety to the bees, for if bees once get the habit of cramming the brood-chamber with honey they will lose much valuable time in starting work in the surplus cases. I suspect that bad management along this line is at the bottom of the complaint of those who 'can't get their bees to enter the surplus cases.' Bees are governed more by 'habit' than any of the domestic animals with which we have to do, and they must be watched closely. When bees get in the habit of storing their honey in the surplus cases they will neglect the brood-chamber in the fall; for this reason I confine my bees to the brood-nest at the close of the heated term so as to have the brood-chamber supplied with honey, if there is a fall flow.

EMPTY SECTION COMBS BROUGHT OVER.

Quite a number of persons have complained that the empty sections when used again do not give them first-class honey. This trouble can be overcome by shaving the combs down till the cells are about one-half inch deep. If managed in this way the sections will be first-class every time. The job is easily and rapidly done by a Bingham uncapping knife if kept hot by immersing it in hot water.

TAKING SURPLUS HONEY.

I am never in a hurry to take surplus honey from the hives, if I have a supply of surplus cases. By the tiering-up plan I keep the honey at the top where the finishing process can go on without the bees soiling the combs. Honey managed in this way will ship better and look better in the market than if it was a little whiter at the start by reason of being taken from the bees the moment it is sealed. And its superior quality will compensate for the slight difference in appearance. *Good quality* will win in the end.

HOW TO BUILD UP A HOME MARKET.

Perseverance is the main factor in accomplishing this desirable end. Some small circulars sent out by the apiarist, explaining the manner of taking pure honey from the comb, and some directions about its management to keep it fresh and free from fermentation, how to reduce granulated honey to its natural or liquid state, its different uses for cooking and table purposes, its healthfulness, &c., should be delivered, one to each family in the circuit of the 'home market,' and above all, samples of pure honey taken from the comb, should be left with every family that is not acquainted with the article in that shape. If the name 'extracted honey' is good enough for you, you can put that 'hifalutin' name in your circulars, but it will be a 'mill-stone' about the neck of your enterprise, so far as your home market is concerned. If such is not the case your experience will differ from mine. A smart boy can be trained to sell honey in and out of the comb, from a light spring waggon provided with all the necessary conveniences for handling and weighing the honey. He should be directed to leave some honey at every new home he enters and fails to make a sale of honey. A circular should be left at each house he visits. In this way hundreds of dollars can be taken in, at prices enough better than city market prices to pay the extra expenses of disposing of honey in this way. After the home market has been well established, the spring-waggon system will not be necessary, except to widen the business and to deliver orders for honey in the towns, &c.—G. W. DEMAREE (*American Apiculturist*).

JOTTINGS ON SECTIONS AND FOUNDATION.

[1618.] *Glass Sections.*—I noticed a question a week or two back anent glass sections exhibited a few years ago. As the querist probably referred to an exhibit of my own at one of the British Bee-keepers' Annual London Shows, I may inform him that they were formed of four pieces of glass, the sides two inches wide, and the top and bottom pieces one and three-quarter inches, to give bee-space, and were held together by narrow strips of gummed paper. The foundation was fixed by warming the top piece of glass and pressing the edge of starter on it, not making it so hot as to make the wax run. Dividers were used as for the ordinary wood sections. Both sides of sections were afterwards glazed, the squares fixed by narrow strips of paper. It would be advisable to work them in a well-made crate, and wedge up tight, to insure that they were quite square when filled. I remember I sold the dozen for 21s., or about 6*d.* each more than the usual wood sections at that time (but then we did not get our sections made from such nice white wood as we do now). Possibly, it would pay to produce a few for sale in an aristocratic neighbourhood, or to give away as presents to grace the wedding breakfast-tables.

Speaking of sections, I have just received by post a sample of Blow's new patent grooved sections, which for utility, neatness, and strength, cannot be surpassed; in fact, it is the *ne plus ultra* of sections for those who wish to use full sheets of foundation. I do not know if Mr. Blow has any special frame or block for holding the sections while inserting the foundation. My idea would be a long trough with rectangular sides, about four inches high. Fold three sides of your sections, leaving one side or top unfolded, place the section in the trough or block, say long enough to hold six, insert the sheets of foundation, then close down the top piece, and with a tap of the hammer drive the toothed ends together. It has everything to commend itself to bee-keepers who have a large apiary; it is strong and rigid when folded, and although not quite so large (inside dimensions) as the ordinary section, the wood being a little thicker to allow of the grooving, yet, if we get sections without the numerous popholes, the grooved sections in the future will contain more honey; at the same time, will be stronger for transit and handling.

And now a word to foundation-makers. I hope the makers of foundation will keep abreast of the requirements of bee-keepers, and supply foundation of a size that will cut up into sheets to fit sections without so

much waste as we have been accustomed to in the past. Take the usual size, viz., stock size, as an illustration. Now, it has been a mystery to me why super foundation should be cut as though it was intended to be put into supers or sections same size as the standard frame. A bee-keeper using full sheets in his sections will have a strip off each end to waste in each sheet, or if he cuts his sheet into eight squares he will most likely get eight nice little pieces of honey-comb hanging from top of section independently of any attachments to the side. This happens more especially towards the end of the honey season, notably when the limes are in bloom.

I myself have taken time by the forelock and have had my stock for the coming season cut 12 in. by 8 in. full, so that I can cut up without waste (and I should like to mention that I have never seen a finer lot of foundation than Messrs. Abbott have made up for me this season). Now, I think a good size would be 12 in. by 8 in. or 8 in. by 8 in., so that we should not get any waste foundation, costing the bee-keeper 2*s.* 9*d.* to 3*s.* per lb., and when remelted have to sell again as wax at 1*s.* 3*d.* per lb. Taking into consideration the prevailing low prices for honey the last year or two, it behoves bee-keepers to work on the closest lines of economical management if they have any wish for a fair margin of profit for their labours at the end of the year when they make up their annual account.—W. Woodley.

THINGS I HAVE LEARNT.

[1619.] Of course I had learnt most of these things in print before, but only during the latter part of the past winter and the early spring has the knowledge been hammered into me by experience. Having a faint hope that the repetition of a few familiar hints may be the means of inducing a beginner or two to take means to avoid disaster in his early bee-keeping career, I give a list of my lessons.

First lesson.—That if the bee-keeper wish to avoid the risk of starving his stocks he will take care in autumn that each is provided with not less than twenty pounds of stores. I am ashamed to confess what this lesson has cost me.

Second lesson.—That late breeding is prejudicial. One of my stocks bred largely as late as December, and succumbed, I believe from exhaustion, in January.

Third lesson.—That it is unwise to winter weak stocks. If other beginners feel as I do then they are very loth to unite, especially if they be ambitious to build up a considerable apiary. I think I may define a weak stock as one that does not crowd at least four frames.

Fourth lesson.—That it is worse than useless to give, even in April, a frame of brood to a very weak stock. I did this in the second week in April, and a few days afterwards found the weakling defunct, and a full frame of brood sacrificed into the bargain. I ought to have known better. I have now ten fairly strong stocks—the best with brood in six frames—and trust that I shall so succeed with them during the coming season that I shall be warranted at its close, in relinquishing my present name of—Welsh Novice.

TOOL FOR UNCAPPING COMBS.

[1620.] Seeing in the *Journal* of April 26, a tool for uncapping combs for the purpose of stimulating, recommended by 'X-Tractor,' I should like to describe a stimulating tool which I think will beat 'X-Tractor's.' My tool can only accomplish one thing, so in this respect it is inferior to 'X-Tractor's.' But I think there are few tools, which can be used with comfort for more than one purpose. The tool is made thus: Cut a piece of tin, 1½ long by ¾ wide, cut teeth ¼ deep, and ¼ apart. Nail the tin to the end of a piece of ½ wood, 8 by 1½. Shape the wood into an elegant handle. The comb need not be removed from the hive when stimulating, it only requires to be drawn a little apart from its neighbour.—R. T. Shea, *Rochford, Essex.*

FROM A JUNIOR BEE-KEEPER.

[1621.] I have often wondered whilst reading this *Journal* that we do not hear more from its junior readers (and I should judge from answers to 'Useful Hints' problem in December numbers that there are a good few). Darcy R. Grimshaw bravely broke the ball, but no one else had the pluck to back him up (self included). I propose, instead of 'Children's Column,' we call it 'Junior Column,' in which the sayings and doings of junior bee-keepers shall be inserted. I hope to hear soon how 'D. R. G.' has been getting on with his humble bees, and whether he has been successful in wintering of them. Stimulated by 'D. R. G.'s' letter (956, page 207) last spring, I searched everywhere, but could not find a nest of humble bees. Shall try again this year. I saw the first humble bee this year on April 16th; it was black, and was working on the polyanthuses. I have been rather unfortunate with my bees this year, having lost three stocks out of six, through loss of queen and consequent dwindling, two being last year's queens and the other an old one. The other stocks are doing well. I am the only bee-keeper in this district, and all I know about bees I have learnt from this *Journal* and other publications.—Freestone (age 16), *Odd Down, Bath.*

THE SO-CALLED TRUMPETER IN NESTS OF HUMBLE BEES.

Nearly two hundred years ago (1685), the Dutch painter and able observer of insects, Mr. Van Goedart, reported having noticed that colonies of humble bees had a trumpeter among them, who every morning climbed up to the top of the nest, whence he summoned the other humble bees to their work by constant humming. Having become acquainted with a great many peculiarities among hymenoptera that live in communities, especially bees and ants, which resemble social arrangements of human beings, it would hardly have surprised us to find among them something similar to the vigilant trumpeter of our barrack yards. But from the time of Van Goedart to the present day, all endeavours to hear the trumpeter again proved futile, and, following the example of Réaumur, people pretty generally began to look upon Goedart's statement as a fable.

Recent observations made by Professor Dr. Edward Hoffer, of Graz, however, have fully confirmed the fact, that several kinds of humble bees, which build their nests under ground, have a watchman who calls the colony in the morning to their labour. In his work on the humble bees of Styria (1st part, Graz, 1882), which is now being published, and which contains most charming descriptions of insect life, this excellent observer of insects relates, how last year he had presented to him a three-storied nest of *Bombus argillaceus*, containing about 150 workers, which he placed in a box, provided with an entrance, and having a cover of smoked glass, in which the humble bees continued their work uninterruptedly, a couple of hours' journey not having disturbed them in the least. The very next morning at half past three o'clock, Professor Hoffer heard a peculiar loud humming in the box, and after carefully removing the wooden lid which covered the glass roof, he observed a so-called 'small female' standing erect on the top of the comb, its head, however, turned aside, and beating its wings with all its might, the humming which this caused being apparently increased by the air forced through the breathing tubes. The small creature continued this music till nearly half-past four o'clock, *i.e.*, for about three quarters of a hour, during which

time the humble bees came out of their nest one after another, and flew off into the fields. And this went on every morning, the trumpeter rose from its nest at the same hour, and continued humming, sometimes uninterruptedly, for a whole hour, until it fell down completely exhausted. After lying quietly on the ground for a few minutes, it recovered sufficiently to be able to crawl into its nest again.

Professor Hoffer, who, of course, was highly delighted with his discovery, was able during the following days to invite his family and various friends interested in humble bees to this wonderful morning concert. One of his visitors, Mr. Zirtsch, afterwards discovered a trumpeter in colonies of *Bombus lapidarius*. It is probable that only those humble bees which build their nests underground have such a trumpeter, and among them perhaps it is only to be met with in large colonies. The ancient observer of insects being thus completely vindicated, Professor Hoffer determined to find out what would happen if the trumpeter were removed. He therefore caught it and pinned it on a card for his collection, and on the following morning everything remained quiet till eight minutes past four, by which time a few humble bees, tired of waiting for the customary signal, began to crawl out of their nest.

At the same time, however, another 'small female' crawled up the side of the box and commenced humming just as loudly and continuously as the previous trumpeter, whose duties the little creature henceforth discharged regularly every morning.

It will be seen from this that the life and doings of humble bees are deserving of a little more attention than has hitherto been bestowed upon them, and that like ants, in which Sir John Lubbock takes such a great interest, they are well worth a place in our study. Their whole behaviour is most amusing, and they are not by any means so ill-natured as their hot-tempered relations, the wasps and hornets. Huber assures us that he himself had seen them carrying their good nature so far as to allow some bees which paid them a visit to carry away the last drop of honey they had.—*Translated from the Gartenlaube*, No. 51.

Echoes from the Hives.

North Leicestershire, April 30.—To-day is splendid day for bees, and they are well at work carrying in pollen from the willows. Nectar, however, is so scarce that robbing is going on in all directions. Saturday last was an excellent day, making the sixth nice day this spring. Neglect of feeding means at present death to the strongest of stocks. Two more fine days and all will be changed.—E. B.

Honey Cottage, Hawes, North Yorks, April 30.—The weather so far has been very unfavourable for the bees. When I wrote my last 'Echo,' February 9, the weather was, to all appearance, promising us an early season, but about February 11 a change came for the worst, snow began to fall, and until March 25 never a bee was able to fly, and ever since then it has been so cold that I have never been able to examine a single hive, because during the few fine days that we have had the bees have been so inclined to rob that it has not been safe to open any hive, and the evenings have been so cold that to open them then means to give them a chill. Of course, I have taken a look under the corners of the quilt to see how stores are, but have never lifted a frame. I am feeding those that are anyway running short, and I have artificial pollen near at hand ready for them when they can get out. There is not a flower to be seen in the fields, even the willows are not out yet. The only flower to be seen is that useful bee-plant, Arabis Alpina.—JOHN WHARTON.

NOTICES TO CORRESPONDENTS & INQUIRERS.

QUERIES.—I have six stocks of bees:—

Nos. 1 and 2.—Old stocks in straw skep; strong.

No. 3.—A last year's swarm. The owner, in attempting to move them in October, lifted the skep off the stand, and left the bees and honey behind. I drove the bees out of the honey, and had them for my trouble, together with the hive, and about one-quarter of the comb, which was not disturbed. I am feeding them, and they are doing fairly well, though not a strong lot.

No. 4.—A stock driven rather late last autumn, and put in a frame-hive. Very weak. Feeding them with syrup.

No. 5.—Last year's swarm, in bar-frame hive; strong, and have plenty of stores.

No. 6.—Late swarm of last year, in skep; not very strong. I feed them.

Question 1.—Should you advise me to transfer the bees from the straw hive to bar-frame? and when?

Question 2.—I live in a fairly good honey district, woods all round; clovers and sainfoin in abundance. I do all carpentering myself, and can get materials at as cheap a rate as any one. Would it pay me to increase my stock? and to what extent? I have nearly 600 acres of land, so it would not be necessary to have them all in one place.

I have troubled you with a fairly long rigmarole, and to sum up: I took the bee-fancy into my head rather last season, and I want your opinion as to whether it would pay me to go in for them strong. I fear the difficulty would be to dispose of the honey. Hoping I have not trespassed too far on your kindness, I beg to sign myself —COTSWOLD.

REPLIES.—1. Your object being to establish your bees in frame-hives, we would advise you, instead of transferring in the old way, to proceed as follows:—Allow the bees to remain in the skep in the position they now occupy until they swarm, or until they show signs of swarming, when you can make an artificial swarm if you prefer it. In either case, put the swarm into a frame-hive, each frame having a piece of comb-foundation about two inches deep fixed to the top bar. Remove the skep to a new position, and put the hive containing the swarm on the old stand, with the entrance as nearly as possible where that of the skep was, so that any bees that are flying may return to and strengthen the swarm. (*See answer to 'Malta,' page* 219 *in our last number.*) On the twenty-first day after the bees swarmed, the brood in the skep will have, with the exception of a few drones, all hatched out, and there will be a *young queen* ready to lay. The bees should now be driven, and put into a frame-hive prepared with foundation as before, and in order to build it up quickly, it should be fed with a quarter of a pint of syrup every evening. In this way, you will obtain two good colonies with good, new combs, and some honey and wax from each skep. The combs should be taken out of the old skeps, the honey extracted, and the old combs melted, and the wax separated from *débris*. 2. Your district being a good one, it would pay you to increase your stock, but we would not advise this being done too fast, until you have had the experience that this year should give you. If those in skeps are treated as above, and those in frame-hives swarm, we think you will (if a novice) have quite enough to attend to for this season. You should get a strong hive with *standard-sized frames* from a good maker as a pattern, and those you manufacture should be all exactly alike. —J. M. H.

REPLY TO QUERY BY 'LORDSWOOD,' PAGE 196.—I made a crate of glass sections and exhibited them at South Kensington show some years ago, the same year as the Princess Christian was to have distributed the prizes. I afterwards let my bees fill them with honey, and exhibited them at our local Flower Show.

Perhaps these were the ones 'Lordswood' saw; they were made thus:—two pieces of glass about 6 × 3 for the sides, two pieces 1¾ × 3 for ends, these four pieces were fastened together with coaguline, the ends between the sides, the top was 2 × 6 and not fastened on, but had a very narrow strip of glass fastened on at each end so as to just fit inside of ends and sides, and which kept the top in its place. To get at the honey it was only necessary to pass a knife round sides and ends, and the honey would then lift out with the top glass, and by having a spare top the same sides and ends could be placed on the hive at once.—W. T. Joyce, *Farnborough, Hants.*

Amateur.—1. *Hive carrying in Pollen.*—Sometimes, but very rarely, pollen will be carried in, but if so, it is in much smaller pieces. 2. *Means of knowing when a Hive will Swarm.*—Not as to the particular time the swarm will leave the hive. 3. *Colony covering Three Frames.*—Yes, with proper care and adding brood occasionally.

A L. Y. M.—*Moving Bees.*—It is a very bad time now to move them so short a distance, but if they must be moved do so at once—there will be much greater losses if you move them later on. Cannot you arrange to allow them to stay until winter?

Gardener.—1. *Hunger Swarm.*—You could not have stopped the fighting. The stocks, no doubt, were strengthened, but we have no means of knowing how many entered or were killed. 2. *Centipedes.*—They will not injure the bees or honey.

St. Ivian.—1. *Spring Treatment of Colony.*—Your treatment has been very good. Feed slowly until fruit-blossoms, and between them and the time of white clover bloomiug. 2. *Wired Foundation.*—Yes; but by wiring ordinary foundation into frames by means of the Woiblet Spur Embedder it costs much less, and is more effective. 3. *Fixing Foundation in Sections.*—There are various methods of doing this. See advertising columns, also notices in this issue. 4. *Drones.*—Examine the colony you saw drones issue from a fortnight ago. We should look upon such an early appearance with the greatest suspicion. If it is very strong it will be all right, but if weak in numbers, the queen is a drone-rearer. Are you sure they were worker larvæ on the floor-board? Drone larvæ reared in worker-cells are very small, and may by a novice be mistaken for worker.

N.—*Drone-rearing Queen.*—The queen sent is a Carniolan. We should say that during the winter the introduced queen has died, the one received having been reared from eggs left by her, but no drones being about, has failed to get fertilised.

Ernest.—*Rack left on all Winter.*—Remove rack at once, and clean up for use when honey flow comes on. If there are any sections with honey in them, uncap and place behind dummy board for the bees to clear out, as if they are allowed to be completed this season, the honey of last season, already in the section, will be darker, making what is termed a 'piebald' section.

Thos. Gilholm.—The piece of comb consists of very old comb, but there is no foul brood. It would be advisable to use comb-foundation.

Robert Driver.—The queen was not among the bees forwarded. The bees are black bees. We are sorry you have been so unsuccessful in wintering your bees. If you desire to have a Carniolan stock, you cannot do better than proceed in the manner you suggest.

Wilson.—The piece of comb forwarded is sweet and wholesome. Many of the cells are pollen-clogged, and a few of them covered with mould, but of foul brood there is not a trace. The bees have most probably lost their queen some time ago, and gradually dwindled away. The vitality of a superstitious idea is very great.

Cluthia.—1. *Artificial Swarm.*—Refer to replies to 'Cotswold'; you will find there instructions which will meet your case. 2. *Staples.*—Staples are used for equalising the space between frames. Metal ends, or broad-shouldered frames, are now used for the same purpose.

T. Nixon.—By the time the queen is hatched there is every probability of her being fertilised, as there should then be plenty of drones flying.

Fawkham.—1. *Cross-built Combs.*—You will find it a tiresome job to put the stock straight. Your only plan now will be to lift out the whole of the frames as they are after having driven the bees up into a spare box or skep; then quickly cut out the combs and fasten the straightest, and also all with brood, into the frames with tape; then shake the bees back into the hive, cover up warm, and feed gently. In three or four days the tapes may be cut and removed. 2. *Stocking New Hives.*—You cannot do better than purchase swarms from a reliable dealer. Try a cross between Carniolan drone and black queen.

Received from Mr. J. H. Howard, of Holme, Peterborough, a section with foundation, as produced by the block figured in his advertisement. The block is secured to a table receiving a section cut as illustrated, and on the centre-bar the full sheet of foundation is guided into the three grooved sides of section, and the upper half of section top rail (cut at an angle of 45 degrees) is brought into place by the hinged door of block. We are highly pleased with the wax foundation used in section.

Received from Mr. W. B. Webster, Binfield, Berks, a section with wax inserted and a block for keeping the section perfectly square. The method invented by Mr. Webster for fixing whole sheets in sections is very effective. The foundation is gripped securely on top and both sides, and fills the section so perfectly that the existence of 'pop-holes' or sagging will be well-nigh an impossibility. The means whereby these results are obtained are:—Three sides of the section are in halves, the third side having sufficient pliability to form a hinge; upon pressing these two halves apart, after folding the section, they form jaws, within which the sheet of foundation is placed: it is then put into the block, a board, part of the block, is pressed upon it for the purpose of holding it firm and true; two little tin staples are then squeezed or knocked in, rendering the whole secure.

Received from Simmins's Bee Company (Limited) their Catalogue of Bee-keepers' Appliances (48 pages). This is a well-arranged catalogue; it is divided into various departments: viz., Queen and bees, hives and implements, and the specialties of Mr. C. T. Overton, whose business has been purchased by the Company. It also contains a list of flower-seeds for bee pasture, besides a large amount of practical information.

Received from Doctor Angelo Dubini, of Milan, his catalogue of bee appliances with price list, together with an illustrative sheet of his manufactures.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Appleton, H. M., 256A Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Burtt, E. J., Strond Road, Gloucester.
Edey & Son, St. Neots.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
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THE
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Editorial, Notices, &c.

BRITISH BEE-KEEPERS' ASSOCIATION.

QUARTERLY MEETING AND CONVERSAZIONE.

The next Quarterly Conversazione will be held at 105 Jermyn Street, on Thursday, May 17th, at six o'clock. Members being desirous of introducing subjects for discussion, or to submit new, improved, or interesting appliances, are requested to communicate with the Secretary not later than Monday, the 14th inst. County representatives will meet at 149 Regent Street, at four o'clock. The Quarterly Conference of the County Representatives with the Committee of the B.B.K.A. will take place at 105 Jermyn Street, at five o'clock.

The Committee have decided to forward copies of the Reports of the Quarterly Meetings to each member of the Association.

ROYAL AGRICULTURAL SHOW.

Entries for the Bee Department of this Exhibition to be held at Nottingham in July, close on Saturday next, the 12th inst. Prize Lists will be sent on application to Mr. J. Huckle, Kings Langley.

ADULTERATION OF HONEY.

We have long been aware that American dealers adulterated honey, but we must confess that we were not prepared for the revelation made in the *Bee-keeper's Magazine* for April. It appears that the Dairy Commissioner of New Jersey has had honey purchased in different towns in the State, and has had it analysed. Out of *thirty-one* samples of honey put up by packing-houses, only *six* were found to be pure! We reprint the list furnished by our contemporary, and commend it to the careful study of every bee-keeper. We have never suspected bee-keepers to be guilty of adulteration, and we are glad to find, as of course we expected to do, that every sample supplied by bee-keepers was pure. We have very good reasons for complaint against American honey-dealers, for did they not flood our British markets with adulterated stuff, to the great detriment of American as well as our own bee-keepers? It will be still within the recollection of many of our readers that in 1879 Messrs. Thurber & Co. imported into England a large quantity of honey. They exhibited it at Kilburn, and certainly up to that time no single exhibit of such magnitude, or presented in so saleable a form, had been seen in London. W. Hoge, who was their honey-man at that time, said there were ten tons, but although there was not even half this quantity, the exhibit was a fine one, and gave a good idea of the capabilities of America in the production of honey. The market for American honey was now open, and prospects were most brilliant; but it was not long before Thurbers, through Hoge, introduced adulterated honey, and, notwithstanding the attractive labels, the British public soon learnt to look with suspicion on any honey bearing the name of Thurber. The British Bee-keepers' Association also did good service to bee-keepers in having honey supplied by dealers analysed and publishing the results.

Hoge left Thurber's, and started business on his own account with an office in the City, a honey refinery (?) at Islington, and all the paraphernalia necessary for the sophistication of honey. He advertised extensively, and his honey was to be seen in many shop-windows; and had he dealt honestly in pure honey, probably his career would not have been such a short one. Adulteration, however, proved for him too great a temptation, and when analysed, of all the samples of honey emanating from Hoge's establishment under various names, there was not one pure. We do not wish to enter into details of how he imposed on the credulity of the public by assuming what he was not, and why he and his fraudulent exhibits were turned out of the Health Exhibition; nor how he imposed on his countrymen a story of which there was not a word of truth, pretending that he had got his honey on the Queen's table, and how this story, with various additions and variations, made the tour of the American papers. Knavery may serve a turn, but honesty is the best in the long run. Probably Hoge has found this out now in his wanderings no one knows where in America, and his firm have lately paid a first and final dividend, a most remarkable one, of ·65 of a penny, or 2*l.* 14*s.* 2*d.* in 1000*l.*!

We mention these facts merely to show the harm that adulteration has done and the reason that American honey is now a drug in the British market. Bee-keepers, both here and in America, have reason to cry out against these adulterating practices of dealers and should decline to supply them with honey. We have before us a letter written to us a few years ago by Hoge & Co., asking us to supply them with our honey, and they said they were

prepared to give us our own price. Suspecting the purpose for which it was intended we declined to sell to them at any price. We hope others will do the same, and thus induce shop-keepers to purchase direct from the bee-keeper, instead of through a dealer. The list is rather an instructive one, and is worth a careful study, as it makes clear two very important points. First, it will be noted that in most cases the adulterated honey is labelled in such a way as to make one suppose it was pure and something extra good. For instance, No. 57, 'Choice comb honey,' No. 62, 'White clover honey from the apiaries of Central New York, warranted pure,' No. 78 is also 'warranted pure;' and one, No. 90, has actually the audacity to state 'Pure orange-blossom honey; is absolutely pure, no glucose,' and yet this is found to be adulterated. The gaudy label and the warranty therefor of an American honey-dealer appear to us in the vast majority of cases very much like a badge of its impurity. The second lesson is that honey in the comb is also adulterated. By referring to Nos. 57 58, and 60, it will be seen that these are all comb honey, yet they are adulterated.

Where does this adulterated comb honey come from? Not from respectable bee-keepers, of that we are quite sure. We have the authority of Mr. Shippen Wallace, Ph.D., for the fact that this comb honey is adulterated, and it is therefore produced. How? That is the secret. Shall we be also told that this is a *Wiley lie*, or is there any other explanation than that this adulterated comb honey is manufactured on some of the adulterating farms by feeding bees? We are glad to notice that not a single sample of honey purchased of bee-keepers was adulterated. Further comment is unnecessary.

The *Bee-keeper's Magazine* has done bee-keepers good service in exposing this adulteration, and, in a vigorous article condemning the practice, winds up with the following remarks, which we commend to our readers:—'So long as Messrs. F. G. Strohmeyer and Co. continue adulterating honey, they should be shunned by all bee-keepers who have any respect for themselves or their pocket-books. The same is to be said of Messrs. M'Caul and Hildreth, and the rest of the gang of adulterators. They should be made to feel that they are outraging the rights of the bee-keepers of this country, and for the few paltry dollars they may make in this nefarious trade they are ruining hundreds of bee-keepers, and rendering hundreds of others poor, with their families perhaps, in want.'

Mr. A. Todd, whose kindness to us when at Philadelphia we shall never forget, cried out, and truly, against this practice, and said the competition was so great that there was very little chance of making a living by dealing only in pure honey, but that rather than adulterate he would give up the business. We are glad to find that he has been true to his word. This is what the *Bee-keeper's Magazine* says:—'It is a lasting monument to our friend, the late Arthur Todd, that, amid all the adulterating dealers about him, he stood aloof, and never soiled his hands with the dirty business, and that when he preached "Deal in pure honey," he also practised it.'

We subjoin the Report referred to from the *Bee-keepers' Magazine*.

ANALYSIS OF HONEY.

The forthcoming report of the Dairy Commissioner of New Jersey will contain notes on the quality of strained honey as usually sold in bottles and jars. Forty-two samples of bottled honey were analysed, and it was ascertained that out of thirty-one samples put up by packing-houses only six were pure. The samples purchased in small towns and villages, representing strained honey put up by farmers, were all pure.

Below is a table of the samples analysed and the result of the analysis:—

STRAINED HONEY.

Office No.	Where Purchased.	Name on Label.	Result of Analysis
57	Paterson	Wm. Thompson, Wayne Co., N.Y., 'choice comb honey'	Adulterated
58	,,	McCaul & Hildreth Bros., N.Y. City, 'white comb honey'	Adulterated
59	,,	Same as 58	Adulterated
56	Hoboken	Ritter, Philadelphia; no label	Adulterated
60	,,	Wm. Collins, Worcester, N.Y., 'choice comb honey'	Adulterated
61	Jersey City.	J. V. Sharp Canning Co., Williamstown, N.J., 'clover honey'	Pure
62	,,	Wardell & Watson, Brooklyn, N.Y., 'white clover honey from the apiaries of Central New York; warranted pure'	Adulterated
76	Newark	J. T. Dunham, 'superior quality of clover honey'	Adulterated
77	,,	Thurber, Whyland & Co., N.Y., 'pure California white sage'	Pure
78	Hoboken	E. A. Walker, Greenpoint, L.I., 'superior XXX honey, warranted pure'	Adulterated
79	Jersey City.	Wm. Collins, Worcester, N.Y., 'choice honey'	Adulterated
80	Hoboken	E. A. Walker & Bro., 135 Oakland St., Brooklyn, N.Y., 'choice honey'	Adulterated
81	Newark	Charles Israel & Bro., N.Y., 'choice California honey'	Adulterated
82	,,	C. G. Leshe & Son, Pittsfield, Mass. 'choice extra clover honey'	Adulterated
83	,,	No Name, said to be Ritter	Adulterated
84	Hoboken	Geo. D. Powell, 'choice extracted Northern'	Adulterated
85	Newark	Wm. Thompson, Wayne Co., N.W., 'choice golden rod honey'	Adulterated
86	Hoboken	E. F. Watson, Brooklyn, N.Y., 'pure California honey from groves of San Diego; there is none better'	Adulterated
87	Paterson	McCaul & Hildreth, New York, 'choice extra honey'	Adulterated
88	,,	Code, Elfelt & Co., San Francisco, 'extra choice Los Angeles'	Pure
89	,,	Frank Charters, New York, 'white clover honey'	Adulterated
90	,,	F. G. Strohmeyer & Co., New York, 'pure orange-blossom honey; is absolutely pure, no glucose'	Adulterated
91	,,	Wm. Thompson, Wayne Co., N.Y., 'choice golden rod'	Adulterated
92	,,	Andrew Jackson, Deposit N.Y., 'pure honey'	Pure
1416	Burlington	R. J. Dutton	Pure
1417	,,	Sleeper, Wells, & Aldrich	Adulterated
1418	,,	Arthur Todd, Philadelphia	Pure
1424	,,	Arthur Todd, Philadelphia	Pure
1425	,,	Western honey	Adulterated
1427	Bordentown	R. K. Allen, farm honey	Pure
1429	,,	Wm. Collins, Worcester, N.Y.	Adulterated
1431	,,	Shipps & Son, farm honey	Pure
1432	,,	S. Garrison, farm honey	Pure
1434	Trenton	Wm. E. Johnson, Moorestown, N.J.	Pure
1435	,,	S. P. Robinson, farm honey	Pure
1436	,,	S. Holcomb, farm honey	Pure
1437	,,	F. E. Erends, Dentsville	Pure
1438	Camden	Brown & Bros., State honey	Pure
1439	,,	Arthur Todd, Philadelphia	Pure
1440	,,	W. Collins, Worcester, N.Y.	Adulterated
1441	,,	Gifford & Stiles, State honey	Pure
1442	,,	Philadelphia Pickling Co., 'virgin honey'	Adulterated

—*Bee-keepers' Magazine.*

USEFUL HINTS.

WEATHER.—After several days of boisterous wind and most ungenial weather we are enjoying calm and sunshine, of which the bees are making the best use. Fruit bloom in abundance is bursting forth, and willows, elms, poplars, furze, &c., are now affording forage. Let us hope, then, that at last the trying winter is past, and a plentiful honey-yield is approaching. But of many a colony, alas! it may be said, *Mortua est.*

BACILLUS DEPILIS.—On all sides we hear of colonies dead, colonies queenless, colonies diseased, *Bacillus depilis* being very prevalent. For the latter disease we have found the best treatment to be plenty of ventilation

below and feeding on salicylised syrup. This should be done immediately the disease is discovered—by the number of dead bodies, bloated, black and shiny, being cast out—otherwise in a few days the population becomes so reduced, that death or gradual dwindling speedily follows. With the exception of the loss of a few weak colonies and of several aged queens—which ought to have been superseded before going into winter quarters—our bees have passed through the winter well, under enamel cloth and free from dampness or mouldy combs, the entrances being kept at full width until the time of pilfering arrived.

Queen Wasps have not appeared at present in our locality. We have not noticed a single specimen, which is somewhat remarkable at this advanced period. The absence of queens now does not, we fear, forecast the absence of their offspring throughout the summer.

Feeding on thin syrup is still carried on vigorously in our apiary, and is thankfully and freely accepted by the bees. Apparently, they prefer it much to winter stores of candied honey, and are actively clearing out the latter. Pollen is now abundant in the fields, and with water and syrup supplied at home the bees have all they can want, and will amply repay the expenditure, we trust, by the future storage of surplus honey.

Natural Swarming, if the weather continues bright and warm, will soon commence; and forward colonies, especially if surplus cases are not in use, should be carefully watched. Our own practice, as we have before stated, is to allow natural swarming, and to place surplus cases on the swarms which occupy the position of the parent colony, a part of the latter being used simply as a nucleus for queen-rearing (*vide B. B. J.*, vol. xv. p. 204). By these means we keep up a sufficient supply of young queens of superior quality—raised under the swarming impulse—for superseding old ones, and have a few over for our friends at the *minimum* of trouble and expense. The average yield of honey under this system will also bear comparison with most other systems. Of course there is no forcing swarms, the bees being allowed to follow their own instinct, surplus cases being placed on all colonies, as a rule, when they are sufficiently populous, at the commencement of the honey-flow. To those who prefer artificial swarming, we say, consult Mr. Cowan's book, p. 89, last edition.

Hives and Super Cases should now be held in readiness with foundation inserted. The best hive we consider to be one containing two similar equal and interchangeable chambers, each capable of containing ten standard frames and two division-boards or of taking a case of sections, with substantial roof, and four stout legs *not* splayed. Splayed legs are so apt to be kicked by the manipulator, unintentionally of course, that the temper of the bees, especially if they chance to be Cyprians, is not improved thereby. Two additional boxes, each taking ten frames of $14 \times 5\frac{1}{2}$ inches outside dimensions, are also very useful and desirable when working for extracted honey, or as a divisional brood chamber by those who prefer a deeper frame than the standard for wintering upon. In all cases we advise the trial of an excluding honey-board between brood chambers and surplus compartments.

Really Good Sections, in our opinion, will always hold their own against extracted honey. But to combs intended for extracting neither drones nor queen must be admitted, if we desire to produce a first-class article. Last season we worked several cases of sections, both 1-lb. and 2-lb., in hanging frames, whose four sides were two inches wide, entirely covering the four sides of the sections, which being crowded into the frames were thus kept clear of propolis, and when finished were as clean and white as when first inserted in the frames. The frames were suspended in a plain four-sided case, just as we suspend brood frames in a hive, with a bee-space below them, and slotted dividers between the sections. The method proved successful, and we hope to recur to it again.

Experts.—We earnestly exhort experts to be very cautious as regards spreading foul brood. We always advise cottagers to destroy diseased colonies by burning hives, combs, bees, and all surroundings. Calvert's carbolic soap, used by the medical profession, and sold in small tablets in tiny tin boxes, is useful for washing the hands after manipulating foul brood. The clothes likewise should be disinfected, which may be effectually and cheaply accomplished by dredging over them a little of the Government Carbolic Powder, sold by all chemists in tin cases, perforated at one end, and holding about a quart, for sixpence. A cheaper and better disinfectant cannot be procured, and it ought to be used in every apiary.

Weak Colonies.—If a very weak colony, possessing a young and fertile queen, be made to exchange places with a strong populous colony about midday, on a fine warm day, when the bees are at full work, it may quickly be metamorphosed into a strong and prosperous one. The only caution necessary is to cage the queen of the weak colony until the following evening when she may be liberated without any fear of being attacked.

There is no more simple and easy method of equalising colonies at this time of the year than this. If the hives are similar in appearance and construction there need be no fear of failure, but under any circumstances we have never known the plan to fail.

Olla Podrida.—*Honey-boards.*—Friend 'Amateur Expert' wishes to know why we advocate the use of honey-boards. In our last 'Hints' we said, that over the slatted honey-boards last season we had obtained sections which were simply perfection, and moreover the bees entered the crates and worked through the perforations as freely did as those colonies over which no excluder was used. That, to our mind, was sufficient reason for advocating further trial. We also suggested that non-success in the use of excluder zinc, in this country, had arisen from laying the zinc sheets upon the top bars of brood frames, instead of using the slatted boards, and allowing bee-space above and below them. This was our own experience, and we have in time past condemned the use, under the former conditions, of excluder zinc, as loudly as any one. Our experience differs from that of 'A. E.' as to the amount of brood and pollen liable to be deposited in sectional and other supers when exclusion of drones and queens is not practised. In moist seasons, when the population increases fast, and honey comes in slowly, we have repeatedly seen sections filled with brood, and pollen placed around it; and although 'A. E.' gives it as his experience that less than two per cent of his sections are defiled by brood or pollen, nevertheless, he has, in days gone by, mentioned the case of a 'leading light' in his 'adopted country,' who said to a friend, 'Come and look at my super, the bees have filled it and sealed it over in no time. Splendid! it is fit for the show!' 'Yes,' said the friend, 'it is the handsomest specimen of drone brood I ever saw; all the *sections* are complete; I hope you will get first prize, you deserve it.' (*B. B. J.*, vol. xiv., p. 188). So then *sometimes*, at least, the instinctive yearning for drone brood leads to defilement of sections. Wherefore, if, as our American cousins say, and as our own experience points in the same direction, bees work sections of superior quality, and, to say the least, as quickly, over excluding honey-boards as they do without excluders, why should we debar ourselves from the use of these? Surely not because our American friends succeeded where we ourselves have failed.

Additional reasons—to those we gave in last 'Hints'—in favour of 'excluders,' we venture to think are, (*a*), exclusion of drones from congregating in sections, and to a certain extent discolouring them; (*b*), prevention of the building of drone-comb in sections, which

frequently takes place, even on the thinnest worker foundation, and spoils the appearance of the sections; (*c*), prevention of the discoloration of the central sections, immediately over the centre of the brood-nest, by the ascending heat, and the close clustering of the bees.

With regard to the last objection, we rarely take off an ordinary case of sections without finding the central ones of a dirty brown colour, unless 'excluder' has been used. This, however, is not the case where the 'Raynor-divisible-section-cases' are used; and we are bound to say that in them we have never met with a single instance of deposition of brood. Nevertheless, in future practice our intention is to place these divisional cases on the excluding honey-boards; so convinced are we of the certainty of thus obtaining more perfect sections than when the admission of drones and queens to super cases is allowed. Indeed the testimony of such ardent and experienced bee-keepers as Mr. W. B. Carr, and others, together with the foremost apiarists of America and Canada, should not be lightly esteemed, or quietly ignored, without a full and fair trial. Superior sections, the case with which they are removed from the brood-chamber, and other advantages enumerated above, induce us to forecast for the slatted excluding honey-boards a great future in the production of comb-honey. Restriction of the brood-chamber—sufficiently large, of course—solely to the raising of brood, without expansion or contraction after the honey flow sets in, and storage of surplus above it, with an intervening honey-board, and tiering up, as required, both for comb and extracted honey, we believe will be the 'system of the future.'

BLIZZARD may or may not be an Americanism, but Nuttall certainly gives it as such. As 'A. E.' states, there are no doubt many obsolete English words, or words whose meanings have been entirely changed in the old country still in use in the United States, *e. g.*, the words 'sick' and 'sickness,' which still retain the old signification in the U. S., while here they have been superseded by 'ill' and 'illness,' the later usage of sick and sickness conveying the idea of nausea only. To the derivation of the word 'blizzard,' suggested by the correspondent of *Notes and Queries*, we prefer our former suggestion of Blinkard, Blidzard, Blizzard, meaning a 'Blinder.' We were born, bred, and educated, during the first quarter of a century of our life, in a Midland county, and freely mixed with all classes—high and low, rich and poor, educated and uneducated—in three or four Midland counties, having kept up acquaintance with the localities for more than forty years since that period, and few if any provincialisms have escaped us, but we never heard the word 'Blizzard.' Blast and Blazer, are common enough, and the former is frequently used as an oath, but Blizzer, for Blazer, we never heard, nor the verb Blissom, which has a widely different meaning. We incline, therefore, to Nuttall's view, that 'Blizzard' is of American coinage to express the violent storm for which they had no word.

Selected Query.

[8.] *What should be done with weak colonies in spring? How can they be strengthened? What is best to be done with mouldy combs? Can they be prevented?*

Two colonies may be united in the manner described by me in Query No. 7. They can be strengthened, first, by contracting the frames of comb to the number the bees can well cover by feeding, to stimulate brood-rearing, and then, when there are sufficient bees to protect and care for it, by exchanging a frame of empty worker-comb for one of sealed and hatching brood with a strong colony, another frame of brood may be added from time to time; but great care must be taken not to do this too fast, and to first ascertain that they are strong enough to cover it and prevent its being chilled. It is best to cut out the mouldy portion of comb, and fill in the space with clean worker-comb or foundation. If simply cut out the bees will usually fill the spaces with drone-comb. It can be prevented by the entrance of the hive being left open the whole width during winter, thus giving better ventilation and circulation of the air at the bottom of the hive, and keeping all dry.—JOHN M. HOOKER.

Allow no more combs than actually needed, place the dummies close up to same, have all well packed and judiciously fed, with entrances contracted; such will hold on till strengthened by a frame of hatching brood. Mouldy combs, if not unto rottenness, can be brought back into use by heat, or hanging in a dry, airy room, and when dry the mould, so far as possible, brushed out; but if combs are placed to a winter distance of 2 in. apart (centre to centre) at right angles to a full entrance with plenty of bottom air-space, they will not mould provided that the roof and hive-walls are sound.—JOHN H. HOWARD, *Holme, Peterborough.*

(1.) If very weak I would unite two or three together; but if only moderately reduced in strength and possessing young queens, I would strengthen with brood from strong colonies, being careful to only give it in such quantities as the weak colony would cover with bees. (2.) By adding frames of eggs and hatching brood from strong colonies able to spare them, removing spare combs, and gentle feeding. (3.) Brush off all the mould possible, and then place the combs in the centre of strong stocks, and the bees will soon complete the cleaning. (4.) Yes; by giving them to the bees to clean off the loose honey after extracting, and then hanging them in spare hives, or boxes, and storing in a dry room until wanted for use.—H. WOOD.

Unite them, and, if possible, give one or more combs of sealed brood — taking care not to give *more than the bees can cover at once*—and pack up warmly. Melt them down and use foundation, unless the combs are very even and clean; then dry in the sun and brush as clean as you can; spray with salicylic acid, or phenol, and fumigate with brimstone before re-using. Combs *covered with bees* in a *dry* hive I have never found mouldy.—W. E. BURKITT.

Build them up by giving hatching brood in such quantity as they can cover easily, if the queen is of any value; cover up warmly and reduce entrances. To prevent store in *dry* condition, half an inch apart in autumn, and paint box with solution of carbolic acid; if good in other respects should utilise them later in strong stocks. Fumes from burning sulphur, or weak carbolic solution, are both excellent preventives of disease.—JOHN EDEY.

If a weak colony possesses a prolific queen and has commenced breeding, I would confine it between division boards and give it a frame of sealed brood from a strong colony, feeding gradually on warm syrup, and covering up warmly, until it attained to the average strength. But in cases of this kind everything depends upon surrounding circumstances, and it is impossible to give any but general rules. Melt down mouldy combs.—GEORGE RAYNOR.

Having weak colonies in spring, I should prefer to unite two or more together so as to make one good colony. They may be strengthened by adding frames of brood from other hives as the bees are able to cover, but I doubt much if the latter would be profitable. Combs found to be mouldy, and not clogged with pollen, should be softly brushed and sprayed with salicylic acid solution, after which they may be hung up in a dry, airy place for further use. If the combs are very mouldy, I would put them into wax basket for melting down. In these days of cheap comb-foundation no risk should be run with old and doubtful-looking combs.—WM. MCNALLY, *Glenluce, Scotland.*

Unite them to others; or if the queen is worth saving they can be strengthened with frames of hatching brood from other colonies. If only slightly mouldy the bees will clean them out, but if very much so the melting-pot is the best place for them: can be prevented by dry hives of sufficient thickness and allowing upward ventilation, or wide entrances during winter.—WM. N. GRIFFIN.

It would depend on the queen: if she was worth saving I should contract the brood-nest to three or four combs, feed with 'Good' candy, to which some meal was added; and if I had a frame of brood I could spare from a strong colony I should add that with as many young bees adhering as possible; but if the queen was aged I should unite to next stock. I find a strong stock of bees will soon clean out mouldy combs. Those combs that are pollen-clogged and got mouldy had better be melted down, as a strong colony of bees would work out a sheet of foundation as quickly as they would clear the old comb of mould besides leaving many of the cells full of useless pollen: the new comb would be far more useful in the brood-nest than the old one under such circumstances. —W. WOODLEY.

If there is a stock standing near, I find it a good plan to take the queen away, and unite the bees to the stock, putting what brood there is in the centre, and move the stock midway between where the two stood before. If they are not too weak they might be shut up close and stimulated by continuous gentle feeding; giving occasionally a frame of brood from stronger stocks that could spare them, and inserting in their place a frame of foundation. Where there are any mouldy combs it is best to take them out and hang them to dry, and as the stocks increase in strength give sheets of foundation. I have found some mould in my hives where there has been too much covering on the tops of the frames, while in other stocks that had not so much the combs were quite dry.—JOHN WALTON, *Honey Cott, Weston.*

Unite and utilise spare queens by giving them to queenless stocks. Great impetus can be given to mediocre colonies by reducing space between combs about end of April or beginning of May if weather is fairly warm. Give frames of brood from strong colonies after weak ones have somewhat recovered. If rotten with mould cut part out, but if only superficially mouldy, dry and then brush off as much of the mould as possible, then spray with salicylic acid solution, and return to bees. Combs will never get mouldy if hive is dry and thickly populated. Combs that have been removed from hives will keep free from mould if properly cleaned out by bees in autumn, and then put away in sound boxes in dry position.—W. B. WEBSTER.

Wait until a few young bees hatch, and then unite; or hold them until swarming time, then unite and use one queen for a stock that may have swarmed. It is very bad practice to rob the strong to help the weak; better far let the weak help each other by uniting judiciously. Mouldy combs do not occur in a dry, well-ventilated hive.—SAMUEL SIMMINS.

ASSOCIATIONS.

IRISH BEE-KEEPERS' ASSOCIATION.

The Committee have made arrangements for exhibiting hives and other bee-keeping appliances and honey at the Irish Exhibition in London. Samples of last year's honey will be shown at the opening of the Exhibition, and in August it is intended to make a substantial exhibit of new honey. Prizes will be offered to members for the best contributions to this latter exhibit.

Since the Report published in the *Bee Journal* of 12th April, the two following District Secretaries have been appointed:—For Co. Leitrim, Rev. J. Garnier Digges; for Co. Donegal, Mr. George Turner.

MONMOUTHSHIRE BEE-KEEPERS' ASSOCIATION.

At the Flower Show to be held at Monmouth on the 15th and 16th of November next the following prizes for honey will be given:—Section Honey, best six 1-lb. sections—(1) 10*s.*; (2) 6*s.*; (3) 4*s.* Run Honey—best six 1-lb. bottles of this year's honey—(1) 10*s.*; (2) 6*s.*; (3) 4*s.* Further particulars may be had from Geo. Tucker, Esq., Hon. Sec., The Shubbery, Monmouth.

HULL AND AND DISTRICT BEE-KEEPERS' ASSOCIATION.

A meeting of this Association was held at the Station Hotel, on Wednesday evening, May 2, when Mr. David Wilson, J.P., was unanimously elected President of the Association, the Rev. R. M. Lamb of Burton Pidsea, and Mr. E. Harland, were elected Vice-Presidents, and Mr. Charles Howes and Mr. Henry Harland, hon. secretaries. The objects of the Association, which is under the patronage of Mr. Arthur Duncombe, M.P., are the advancement of rational and modern bee-keeping in place of the old and barbarous sulphur-pit method, and the spread of a profitable method of bee-keeping to the advantage of cottagers and others in the East Riding. The prospective arrangements include, amongst other things, a lecture on some subject of interest connected with bee-keeping at an early date, and a honey fair in the autumn.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to "The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

OUR HONEY IMPORTS.

The value of honey imported into the United Kingdom during the month of April, 1888, amounted to 2508*l.* [From a return furnished by the Statistical Department H. M. Customs to E. H. Bellairs, Wingfield, Christchurch.]

IN-AND-IN BREEDING.

[1622.] 'Theta' (1604) takes the bull by the horns with a vengeance when he so courageously rushes in to show your readers how much they are mistaken when they imagine it possible to improve their bees (or, indeed, the breed of anything) by a judiciously carried out system of crossing; or that they can reinvigorate waning or expending force by a timely infusion of fresh blood. He plunges *in medias res* and boldly tells us that as he has, 'to a small extent, proved that there are no evils to be feared from consanguinity;' that as Mr. Greene has 'for five years bred from the progeny of a single pair of fantails;' and that as M. de Roos married his cousin without any serious results (if any), in-and-in breeding is to be commended, and whole generations and æons of historical record are to be by these means falsified, and rendered worthless by this absurd new doctrine.

The letter of 'Theta' is so well written and thought out, that on that account it is worthy of consideration; but the germ of his communication would lead me to dismiss it from very serious argument, so much am I

convinced of the instability of the foundation on which his structure is built. And this is more consideration than is shown to *their* opponents by M. de Roos and Mr. Greene; for while M. de Roos says, 'The theoretical statements of the adversaries of consanguinity MAY BE lightly esteemed' . . . He also states, 'The results of numerous direct and indirect experiments alone can solve the difficult problem.' Mr. Greene characterises 'the belief that consanguinity is productive of deterioration' AS AN ABSURDITY, and is thereby inconsistent with his subsequent statement:—'Heredity is a potent factor in the determination of health no less than of disease . . . but when it comes from both (parents) the tendency to either strength or weakness is increased to an appreciable extent, or in the ratio of one to four, and so on in geometrical proportion.' He also says that 'consanguinity alone will not produce disease in the offspring.' Neither will an open drain near one's house, but both will offer a specially prepared alighting place—a happy hunting-ground—for just that very disease which goeth about like a roaring microbe, &c. Yet Mr. Greene himself tells us further on in 'Theta's' letter that 'consanguineous parentage transmits to posterity with reduplicated intensity' certain diseases and characteristics; 'in such cases Nature providing her own remedy, for, after a time, the race thus produced will fail from sheer lack of vigour to maintain it.' In order for this gentleman's experiments to be of service in an argument in favour of in-and-in breeding, it would be necessary for his fantails of to-day to be the descendants of *nearest* relatives in each generation; for, in a question of this sort, we cannot allow breeders to look around for the finest birds and keep breeding from them. We should have consecutive generations of *nearest* kin crossed, and to prove an argument 'the nearer the better' in opposition to the opinions we hold of 'the further away the better,' make us *avoid* relatives and proceed to the other extreme—yourselves to give point to *your* argument. I imagine the pigeon-fanciers of the future won't have many of 'Greene's strain of fantails.'

Let M. de Roos carry his human experiments a little closer to the argument and intercross in nearer relationship (of course *the nearer the better* according to these three authorities) for generations, giving nature at least a chance, in point of time, to improve the race; and I think she would 'leave not a wrack behind.' The directories of the period would be ransacked in vain for, at least, male representatives of the family.

Even if the instances given of alleged improvement by in-and-in breeding could hold water as proving *bonâfide* improvement, they are so meagre and few compared to the myriads of examples to the contrary we see in a rough survey of animated nature, that they could only be adduced as 'exceptions which prove the rule.' Besides, it has yet to be proved that abnormal sports and freaks of Nature, which are all right to 'the fancy,' are at all improvements on original ancestors as to vigour, size, fecundity, and hardness of constitution, just as it has yet to be shown that M. de Roos' male grandchildren (or even children) are improvements, mentally and physically, on this celebrated author. Nearly every man of middle age has seen instances of human degeneracy or deterioration resulting from the marriage of cousins in *one* generation; and I have a well-authenticated instance of cousins marrying for *four* generations, the result being that all the progeny were devoid of hair and nails, and were either imbecile or blind. On the other hand, instances of benefit resulting from judicious crossing of varieties are indeed 'too numerous to mention;' they occur all through the animal and vegetable kingdoms.

I regret that 'Theta' instanced the Jewish race in support of his theory: it is bringing Bible history into the argument, and that should have been avoided; but so long as it has been introduced, it is necessary to meet the charge that interbreeding is, or has been, beneficial to the Semitic race by the distinct statement that true in-and-in breeding has not been faithfully carried on by them, and even so far as it has been partially practised it has been detrimental to them in my opinion. In fact it is, in all likelihood, one of the causes of the peculiar position of that people amongst the nations of the earth,—wanderers, without organization or head, over the whole surface of the habitable globe, subject to persecution and misery everywhere; not remarkable, to say the least of it, for those vigorous qualities which go to make strong nations, and which are characteristic of peoples of mixed ancestry.

Your correspondent says that in all the sacred writings there is no direction to *prevent* in-and-in breeding. I will not contradict him, as it will open up a religious discussion; but as he is evidently interested in this aspect of the question, I may be pardoned for asking him to search out where Cain found his wife, driven out as he was into the land of exile (Cain, the first man born of woman!). Certainly not in a consanguineous union, of which there is, I believe, no instance amongst the children of Adam. And though there is nothing to *prevent* in-and-in breeding in the following passage, yet the inference, to my mind, is decidedly in a preventive direction:—'When men began to multiply on the face of the earth, and daughters were born unto them, that the sons of God saw the daughters of men that they were fair; and they took them wives of all which they chose. There were giants in those days; and also after that, when the sons of God came in unto the daughters of men, and they bare children unto them, the same became mighty men which were of old, men of renown.' Let us leave the Bible alone, please, 'Theta,' for we may not, all of us, take it as being a history of the origin and growth of the whole human family.

It seems to me that 'Theta' says a great deal to upset his own argument, *e.g.*, 'Take two known consumptive or scrofulous human subjects and unite them, and the chances are, many thousands to one, that the progeny will be consumptive to a greater degree than the parents.' Just so. That is exactly the point. You emphasise a taint in the blood of the union, and if one parent member of a family have a taint in the blood, his or her descendants are likely to receive it hereditarily; *ergo*, to lessen the risk, relations should not intermarry, and, *q.e.d.*, the marriage of near relations is to be condemned because of this danger. Again, he tells us, 'An evil of this sort is ten times more apparent when the parents are nearly related,' because 'first cousins are the produce of a pair of grandparents. Presume one or both grandparents to be suffering from an organic disease, does it not follow that both the cousins have the seeds of it in their bodies, and that the bodies of their progeny are favourable incubators for its propagation?' Here we get Truth itself; but I certainly read it as being condemnatory of consanguineous unions.

'Theta' asks for a second Lubbock to arise. Why not let the first Lubbock arise (a second Frankenstein) and speak for himself? In his work on *The Origin of Civilisation* (p. 125), Sir John Lubbock says: 'The inferior energy of children sprung from in-and-in marriages.' 'The advantage of crossing, so well known to breeders of stock, would soon give a marked preponderance to those races by whom exogamy was largely practised.' On p. 123: 'The evils of marrying near relatives.' 'Exogamy a reformatory movement to break up the intermarriage of blood relations.' To quote further would be to give you pages of marriage laws showing how too near consanguineous unions were avoided. Every one will, I think, admit that the lower we go in the scale of humanity the more barbarous and rude are the customs of the race as regards the relationship or otherwise of parents towards each other, and, per contra, the higher the civilisation the greater is the care exer-

cised to prevent what may seem too near consanguinity (witness the action of the bench of Bishops with regard to the Bill for legalising marriage with a deceased wife's sister).

Sir John Lubbock, in his book, comes to the following conclusions:—

1. That existing savages are not the descendants of civilised ancestors.

2. That the primitive condition of man was one of utter barbarism.

3. That from this condition several races have independently raised themselves.

And I gather from the many instances given in his book that those races which practise, or have practised, consanguinity in their breeding do not advance, but either stand still or decline into mere savagery, and ultimately die out, while the converse is the case with those whom we observe as avoiding in-and-in breeding.

Without being insulting to any civilised race, I will take the Australian nation, the Bosjesmen, and the Redskins as illustrating the one practice, and the English, French, and German speaking people the other.—R. A. H. Grimshaw, *Horsforth, near Leeds.*

BEES COLLECTING HONEY.

[1623.] Saturday, the 5th of May, I visited my bees at Farnborough in Kent, about ten miles from my house. It was a beautiful day, and quite a treat to be away from London, to realise that the recent rains and the warmer nights had at last started all trees, shrubs, &c., into active life. The fields are green, and the buds of the fruit trees are beginning to open, the gooseberries are in full bloom, and my bees were busily at work on them, bringing in honey quite fast, and had evidently, from the appearance of the combs, been doing so for the last few days, when the boisterous winds would allow. The nightingales were singing close to me during the examination of four of my colonies. The hives were in splendid condition, they had wintered well, and three of them full of bees, and the majority of the frames of combs nearly filled with sealed and hatching brood on both sides, just in the condition to have the advantage of the whole of the fruit-blossom as it comes out, if the weather is only propitious. In shaking the bees from some of the combs during my manipulations the thin honey positively poured out of the cells drenching the bees as they left the combs; the hives smelt quite strongly of the gooseberries, the peculiarity of which no doubt many of your readers have observed. The upper part of many of the combs had been built out with nice white comb, a hint that supers must not long be delayed, and had I not been pressed for time I should have at once put them on. Fortunately professional business calls me into the neighbourhood again on Wednesday, when I hope I shall get time to super them.

Being at a distance it is impossible to give the bees the attention they would otherwise have. I think, however, that nothing that I could have done, had I been on the spot, would have improved their condition. I am a great believer that the majority of bee-keepers over-manipulate and meddle too much with their bees; robbing them too much of their natural stores. Feeding late in the autumn, however judiciously done, excites the bees, stimulates the queen to lay, when, if left to herself, she would be resting. Many of the old bees die from overwork and undue excitement, leaving the hive in many instances 'to perish in the cold;' the young bees hatching late are often unable to take the necessary cleansing flights, spring dwindling and dysentery being the result.

My bees were left with abundance of natural stores, were not fed in the autumn, or anything done to them since the beginning of October until about three weeks ago, when I just looked under the quilts to see they had sufficient food left after the long winter, and they have not been fed this spring; nevertheless they are in as good a condition for honey-gathering as I could wish them to be. I am sure that in leaving plenty of natural stores in the autumn we get amply repaid for so doing the following season.—John M. Hooker.

SELECTED QUERIES: INFORMATION DESIRED.

[1624.] I was very much pleased and instructed by the answers to your 'Selected Query' of May 3rd, 'What is the best thing to do with queenless colonies in spring? Should they be united to those having queens?' I should like to ask a few questions, perhaps some one will answer. If they were queenless before May, or if they were weak colonies, then the answers generally were, 'Unite,' with the exception of Mr. Edey, who would form nuclei, giving artificial heat. If queenless in May and strong, the opinion which carries weight, but needs further instruction, is, that brood or eggs should be given for queen-raising. Probably in the south no difficulty would be felt in having drones flying so early, but in some districts to the north there would be danger of not having any flying. Yet, by the answer of Mr. McNally, that difficulty in his case is got over. Are the drones produced naturally, or are they produced by giving empty combs to selected stocks? Mr. Edey's answer has the appearance of increasing this difficulty. It is true he applies artificial heat to the early nuclei for queen-raising. Does he produce the select drones by the same method? If so, are they kept under cover? Are they allowed to fly in the open for fertilisation?

I was very pleased to find that Mr. Raynor had been able to successfully winter nuclei of three or four frames with young queens. They are of great value in spring to replace the loss of queens during winter, or to build up into stocks for summer work. To do this, is any extra protection needed? Would it be necessary to have them in the house? Would they be wintered in the open garden? We think answers to the above would be of great service to many of your readers, and could be given with the greatest satisfaction by the parties named.—R. M.

BIRDS *v.* FRUIT-BUDS.

[1625.] I am pleased that 'Birds *v.* Fruit-Buds' has been revived in the pages of the *Bee Journal* by Mr. Hiam. Although the subject is not strictly speaking an apiarian one, yet it affects the bee-keeper more closely than it at first appears.

The culprits of bud devastation are our old enemies, the blue-tit, tomtit, and the bullfinch, a most accomplished bud-consumer. It is simply incredible the amount of damage two or three of these birds are capable of doing in a few days. The buds are not safe from their voracious appetites until almost ready to burst into flower. It is not only fruit-buds that they have an affection for, but hawthorn, bird-cherry, sloe blackthorn, myrobella plum, &c., all come within their bill of fare. The damage, of course, is done in winter and spring, and we do not know of it until the time flowers should appear, then we solace ourselves by blaming the weather, or that it is not a fruit year.

As fruit-blossom forms a considerable item of bee-forage it behoves the bee-keeper to use every means to take advantage of it, and also to lessen the chance of any of it being destroyed by birds, which ought to be shot whenever they are seen at their destructive work. Many people think that they are looking for and destroying insects, when in reality they are simply and completely relieving the trees of a valuable crop of fruit.

It is decidedly monstrous that so much legal and moral protection should be extended to such numbers of

our bird fauna. This protection is, I am sorry to say, rapidly increasing, and, too, at the expense of agricultural occupations (including bee-keeping).

It is very delightful no doubt, and I can thoroughly understand the enthusiasm a suburban resident would exhibit should there perchance visit his garden either a bullfinch or blue tit, but should his feathered visitors insist on acquainting their hungry stomachs with the quality of his gooseberry buds, the suburban resident, I opine, would (unless ignorant of the damage they were doing) think, after all, that it was rather too much of a joke that his crop of mellow gooseberries should be at the mercy of his gay visitors.

In the country where these pests are more numerous, it is a real nuisance to many a small holder, market gardener, &c., to be always in the *qui-vive*, gun-in-hand state, as it to him and to many others means a vast deal more than those kind (?) hearted folks (some of whom tie pieces of suet on a string and take pleasure in watching the trying evolutions of the bird in his endeavour to get a mouthful) are aware of.

I can put on record here the fact of a five-acre orchard's produce being totally destroyed by these birds two years ago.

I am glad that the sparrows here have not acquired a taste for fruit-buds. I have watched them very closely for years past, but have never detected them eating any. They, however, destroy crocus and primrose flowers and revel in green peas.—HENRY DOBBIE, *Thickthorn, Hethersett*.

SHALLOW FRAMES.

[1626.] I am much interested in Messrs. Carr and 'Useful Hints'' opinions on shallow frames, but has it not come too late for them to lay down the bounds of measurement seeing that there are so many thousands of such frames in commerce already? Mr. Carr declares his conviction that a 6-inch box with a 5½-inch frame is the best surplus chamber extant for all purposes connected with working for extracted honey. Now why is the above measurement of frame the best? Is not a 6-inch frame equally as good?

Mr. Howard, of Holme, exhibited at Norwich in 1886 super boxes containing frames of the usual standard length by 6 inches in depth, and since then this practical manufacturer must have sent out a great number,* and I believe was the first maker to offer them to the public. I use them myself and can find no fault whatever in the size; and no doubt there are many more bee-keepers like myself to whom the Howard shallow frame is of some interest; and should the B.B.K.A. decide on any given measurement for a shallow frame I trust the 6-inch Howard size will not be ignored.

I fail to see the advantage or the reason of Mr. Carr's 'firm conviction' as to his measurements being 'the best.' No doubt his size is very convenient, and may work well, but I claim for the other size the same good qualities.—HENRY DOBBIE, *Thickthorn, Hethersett*.

RUST FROM SYRUP CAN.

[1627.] Not long since I purchased from a well-known bee-keeper's supply firm a 'Bee Proof Syrup Can,' for which I paid 6*s*., hoping thereby to save time and trouble in carrying syrup about. The first time I used the said can everything appeared to go well. A day or two since I placed a second lot of syrup in it, and filled my feeders therefrom. To my surprise this morning on going to replenish the same I found that all my stocks (eight) had not taken any of the syrup, so I took off the said feeders to ascertain the cause, and discovered that the syrup had a brown yellow tint instead of pure white as syrup ought to have. I find that the hinge of the can lid and the spout had rusted, and the rusty liquid running down the sides of the can had polluted the syrup. The result being that I had to throw away twenty lbs. of syrup, and the can I can't safely use again, so that there is a dead loss of at least 9*s*. No wonder amateurs get tired of bee-keeping when such things happen, and I think the above should be made public as a warning to amateurs like myself.—LEX, *Sussex*.

* I have communicated with Mr. Howard and learn from him that he has sent out some 35,000 shallow frames of 6 inches in depth.

SAVED!

[1628.] In passing along amongst my hives at 2 o'clock yesterday, I found, on the alighting-board of a stock recently sent me in a present, and which I had not had time to examine, four bees evidently in a weak state. My suspicions of starvation were aroused. The hive was still, no work going on. All the other stocks busy. Plenty gooseberry blossom to attract them.

Lifting the heavy wooden cover, I found the bits of carpet in a disordered state, freely admitting bees through, these were crawling about in a half-dead condition. A further examination showed me a hive well stocked with bees, but nearly exhausted for want of food. Hastily bringing two sections from the 'bee-shed' I laid them flat side down over the frames covering all over with fresh warm carpet, packing well all around. Above, I laid across the sections (carpet between of course) a large hot iron, covering over with more carpets, then the wooden cover, stuffed the six little ventilating holes, blocked up the entrance entirely. Across this and resting upon the entrance blocks, I placed another very hot iron keeping it in that position for half an hour. By that time there was a lively hum inside, removing this iron to one of the side walls supporting it upon bricks, thus warming the walls of the hive. Then gave space at entrance for one bee to pass.

The bees were rejoicing, and gave every evidence of returning vitality by a noisy hum, clearing out some young chilled, well-advanced brood. But for the timely arrival of artificial heat of food a good stock would have been lost. To-day they are busy and active even in the midst of showers. The hot irons were procured from a friendly tailor's workshop near at hand.

The reader will notice the bees were not allowed to touch the irons.—THE BRAES, *Doune, N.B. May* 1.

CAUTION.

BEES-WAX FOUNDATION *v.* PURE COMB FOUNDATION.

[1629.] Being one of your regular readers and a well-wisher to all concerned in honest bee-ology, I thought a word or two of caution to those intending purchasers of comb-foundation, who, like myself, are not overdone with ready cash, and at the same time are anxious to buy in the cheapest market, might be seasonable and acceptable if you will allow me the space in your paper.

When comb-foundation was almost a novelty, I adopted it, and was delighted with the benefit derived from its use. Since then I have used it freely; by freely I mean full sheets, everywhere instead of starters and half-sheets. When I commenced I believe the foundation-makers in this country might be numbered on the fingers of one hand; now, according to what one can gather from the different advertisements, there is quite an army of them, no doubt called forth by the demand for their produce; but I am afraid the competition engendered thereby has not been of any benefit to the interests of bee-keepers.

The reformation of bee-keeping was advancing with rapid strides from the dark ages of sulphur pits, and honey looking like that juvenile corrective mixture treacle and brimstone, with a flavour not much better,

and medicinal properties producing results most delightful from a motherly point of view, to the time of our lovely tiger-like (in more senses than one) bees, sections transparent, and honey brilliantly clear and tempting.

I am sorry to say these improvements have not gone on all round, for, as the demand for comb-foundation became greater, the makers—not all of them—have produced an inferior article, and deliberately advertise it to the public as pure comb-foundation. To my own chagrin I have used this horrible stuff, foundation is a misnomer, as that is exactly what it is not. The bees—poor deluded creatures, like myself—take to it like ducks to water, and when warm and partly laden with brood, honey and bees, the cells which should have all sides equal will be quite oval, and of no use whatever for brood or honey. This is not the whole of the trouble; if it happens to be hot weather, nineteen out of every twenty sheets will fall down and curl up, forming a roly-poly bee-and-wax pudding on the lower bars of the frames, binding them all together, to the disgust of bees and bee-keeper.

I know of nothing more provoking than on a warm evening you wish to extract some surplus honey, and, upon opening a hive, you find your bees all in a mess at the bottom; your queen (a beauty) rolled up in the general wreck. If others can refrain from saying words that ought not to appear in a Sunday-school primer, they are more clever than myself.

Moral.—Get your foundation from some reliable, honest, old trader, who is too anxious about his fair name and repntation to risk compromising it by selling such rubbish. Ask for pure bees-wax comb-foundation, and see that you get it! If it is a little more expensive, pay and grin. Better pay and grin now than stamp and swear after you have wasted your money and ruined your colonies.

As a test for the quality of comb-foundation, experience has taught me that if you can wrap a piece round your finger like the roll gingerbread sold by confectioners it is utterly worthless; but, on the contrary, if it will snap or split off upon being bent, you may safely accept the sample. I am aware a few sheets get shaken to pieces in transit, but I prefer to see it so, as that proves, to my mind, its fitness for foundation. These remarks more especially allude to the thick body foundation, and not to super foundation, as my experience has been highly satisfactory with respect to supers.

The prime cause of my writing this article is the derisive, sneering, and jeering look of an old-fashioned croaker, who has seen the mess I am in, and who says, 'Yah'll not catch me putting onny o' that 'ere darned stuff to my bees!' The same man, a few years ago, presented himself, all fragrant with tobacco-juice and smoke, in my shop amongst a lot of ladies, and propounded the very solemn question, 'Do yah want to buy onny honey?' at the same time producing a sample of candied stuff out of his coat-pocket in a piece of brown paper. It is needless to say there was no trade between us. But if we wish to assist the poorer classes and the class from which this man comes, I think we ought not to adulterate our appliances, and so weaken our chance of proving to them the advantages of bee-keeping as taught in your very valuable *Journal*.—LINCOLNSHIRE.

BEES AT SHOWS.

[1630.] I am glad to see suggestion made by 'Village Shoemaker' in a recent issue of your paper. I have kept bees in bar-frame hives for the last three years, and have attended several shows during that interval, at which there are bee experts. They drive the bees from one skep into another and stop at that point, not further showing how to transfer from skep to bar-frame. Neither do they show how to place sections in their proper position, nor how to fix comb-foundation. We know there is a right and a wrong way of doing everything, and the poor cottager, converted from straw skeps and sulphur, yet unaided by the expert's superior knowledge as to the proper fixing up of bar-frames, would, in all probability, hit upon the *wrong* way. I sincerely trust your note at the end of 'Village Shoemaker's' letter will have the desired effect, and that in future at shows will be seen cottagers leaving the expert's tent enlightened and not mystified as to the proper management of bar-frame hives.—EDMUND J. JONES, *Ysgubor Fawr, Penderyn, Aberdare, May 5th.*

SOFT CANDY FOR SPRING STIMULATIVE FEEDING.

[1631.] Take seven pounds of lump sugar (white crystallised will do), two table-spoonfuls of vinegar, one teaspoonful of salt, boil together with one quart of water, crush any lumps that may be still undissolved and continue boiling until the mixture attains the heat of 240° to 245° Fahr. If you have not a thermometer registering these high figures take a pipe stalk and dip it into the sugar, after having drawn off what adheres to the pipe between the thumb and finger, try if it will stretch out a fine thread between the thumb and finger about an inch long; if it is not strong enough to do that, it is not quite ready and must boil again a little longer, perhaps five minutes, according to the fierceness of the fire; but great care must be taken not to pass this degree, which is called 'The Feather' by confectioners, as the candy would then be so hard the bees could not use it. Upon the desired degree being reached add eight ounces of flour, and stir upon the pan sides until it looks like so much thick cream, in which condition it should be poured upon a slab or smooth table, or, failing these, a door-step, and with a long flat stick work it about *thoroughly* for fifteen minutes, and then put it into any old card-board box lids or sardine-boxes. Allow it to cool, and it will be ready for using under the quilts of the hive.

This candy is about as stiff as candied honey and looks very much like it. For spring feeding it is excellent (especially in a cold spring like the present one). There is no fear of it running down among the combs as it is tenacious and tough like a piece of soft putty, or the beautiful white cream we get in the finest quality chocolate creams; the manner of preparation is the same, of course without the salt, vinegar, and flour.—H. S. F.

MODERN BEE-KEEPING.

PROGRESS IN BEE-KEEPING.—The last fifty years have amply compensated for past neglect by the enormous progress which has been made in our acquaintance with this extremely interesting study. The anatomy of the bees themselves, whether queens, drones, or workers, has been minutely investigated under the microscope; the old straw hive, or 'skep,' has been abandoned in favour of the wooden 'bar-framed' hive with moveable combs; instead of suffocating his bees the bee-master merely takes out one or more combs, brushes off the bees, extracts the honey, and replaces the combs to be refilled. It has been discovered that the most vindictive bees may be subjugated and made perfectly tractable by blowing among them a few whiffs of brown-paper smoke, or the vapour of creosote, or by touching the tops of the combs with a feather dipped in carbolic acid. The bee-keeper, instead of leaving his hives undisturbed until the autumn, is for ever opening them, manipulating the combs, increasing or diminishing the space, feeding the bees, or extracting the honey. The bees, instead of having to make their own wax, at a vast expenditure of time and labour, have sheets of wax provided for them, in which the rhomboidal bases of the cells are ready stamped by machinery, and the net result

is that the annual yield of honey from each hive is from five to ten times as great as under the old system, with the further advantage that the lives of the bees need never be sacrificed. No bee-keeper, in a favourable part of the country, is now-a-days content with a harvest of less than a hundred pounds from each hive, and even in the suburbs of London as much as forty or fifty pounds per hive may be realised.

Why, then, is the army of bee-keepers so small? The price of honey is not so high as it was, but it is still possible to sell it in most country districts at a shilling a-pound, and as the original cost of a bar-framed hive stocked with bees, together with all the necessary appliances in the shape of comb-foundation, smoker, veil, extractor, and so forth, need not exceed 3*l.* at a liberal estimate, it will be seen that modern bee-keeping offers to amateurs the agreeable inducement of a handsome profit; and it is much to be regretted that in spite of the praiseworthy efforts made by the British Bee-keepers' Association the advantages of bee-keeping as now practised are not more widely known among the poorer classes. It is true that cottagers as a rule have not much spare time, but it is wonderful how little time need be taken up in attending properly to a hive. Five or six hours a month in the summer season, and five or six minutes a-week, at certain periods of the spring and autumn, should be ample; and a man's circumstances must be very unusual if neither he nor any member of his family can find this little leisure. In every poor man's garden there is room for a beehive; the flowers of the field produce a store of nectar plentiful enough to supply (without any appreciable competition) at least a hundred times as many hives as are now in existence; and apart from the pecuniary profit, the study of bees yields a peculiar pleasure of its own, opening up revelation after revelation of minute wonders in endless succession. . . .

Work yet to be Done.—Although on the whole a great advance has been made in apiculture, a study of the *British Bee Journal* for the last two years reveals the fact that much still remains to be done. That the science has arrived at a stage from which avenues of improvement open themselves in all directions is evident from the fact that in matters of detail there is a singular want of unanimity among its exponents. On almost every point rival theorists are fiercely at variance. The champions of the Ligurians, Carniolans, or Syrians, will not listen patiently to the slightest detraction from the merits of their favourites. The advocates of salicylic acid laugh to scorn the champions of phenol or camphor. If by any mischance a hive becomes queenless and it is necessary to introduce a new queen, the puzzled amateur is confronted by conflicting recommendations as to the proper course to be adopted. If he desires to establish a new hive, and wishes to obtain the best possible kind, he finds himself in doubt between the 'combination' system, the 'storifying' system, the Stewarton principle, the Heddon principle, and many others, between which, after all, there is very little to choose. When it becomes necessary to feed the bees he is distracted by the advocates of dry-sugar feeding on the one hand and syrup-feeding on the other.

However much they may differ in other matters, all bee-keepers will agree that bee-keeping is a most fascinating pursuit. An old French writer, De Gélieu, once remarked that he had never met a bee-keeper who loved his bees moderately, they were all enthusiastic devotees. Certain it is that a beehive is a little kingdom filled with the most astonishing marvels. The study of it is endless. If it is a source of pride and of gain to its possessor, it is above all a wonder of wonders to the naturalist. So exquisite is the mechanism of a bee's organs and muscles, so varied and complicated, so mysterious and well-nigh inexplicable are its instincts, and so faithfully and beautifully does it perform its appointed work, that we can think of no branch of science the study of which is better calculated to arouse an inquirer to enthusiasm.—*Good Words for May.*

Echoes from the Hives.

Appleby, Doncaster, May 1st.—This ought to be the beginning of the bee's spring, with the thermometer at 50° by breakfast time; but no, the wind is very high, and so it has been bad weather of some kind the whole winter. In consequence I have scarcely seen my workers out, and knowing that I added driven bees to my stock somewhat late last year, I expected, as has proved true, that I should have blanks in my rows. I only looked through the hives a few days ago, and found plenty of food, but in no case more than two patches of brood, the size of the palm of your hand. Curiously the best and strongest hive consisted of one packed away in the worst manner. It was late and I put a lot of driven bees into a Carter's seed-box, ½ inch thick of wood only, holding six frames, placing a poor old quilt and tick over, and spare roof by way of an umbrella. Another also in an inner box of a Cowan hive, barely quilted and roof stuck over, is at least as good as any if not better, although in extra strong hives. So I lose faith in double walls and chaff packing, thinking a good, dry, taut hive will do as well as a better! The two hives I lost were the only ones I have on the right-angled system, and I have never had bees do so well as in the parallel style. I fear we shall, with difficulty, build up our stocks for the white clover, unless it, like the whole chapter, be late too. My best hive last year was a Cowan piled up, and to try every recommendation I kept the old brood nest at the top, thinking, as written in the *Journal*, that the queen would descend; but no, she stopped at the top, never leaving the original box to lay. I am much pleased with the wire embedder, figured in the *B. B. J.* last year, it has saved me many a comb when extracting; in consequence, I advise all to use wire if working for extracted honey.—Eastern Counties.

Cottingham, May 7.—Since my last 'Echo' a great change has come over this part of the bee world. The bees get out every day, or nearly so, and pollen is going in the hives with a 'rush,' eggs are being laid fast, especially by the Carniolans and Italians; and if the bright weather continues, we shall soon be at boiling point. To-day I examined all my hives, and found combs already whitening at the top, which is the result of a large area of gooseberry bushes near at hand. I received a Carniolan queen on Friday last from Mr. F. Benton, and made up a nucleus for her in the following way:—Placed three frames in a hive, one of food, one empty, and one brood from a strong stock, on which I caged her majesty in a cage 6 × 4 × ⅜. I then removed a very strong stock of Italians one foot from its position, and placed the nucleus six inches on other side, so that the flying bees got pretty well divided between the two. This morning I released her, and noticed how kindly she was taken to by the bees. To-night, at six o'clock, I took a quiet look again and found the empty frame filled with eggs on both sides, and from end to end. Am trying both 'right-angle' and 'parallel' hives, and find, up to now, the brood-nest is the largest in the 'parallel' hives in every case.—Charles Howes.

Honey Cott, Weston, Leamington, May 7.—The weather here seems to have changed for the best this last few days. The bees are rushing off to the woods and gardens where there are any blossoms for them to rifle, a great contrast to what it was a week ago. Yesterday, though it was a dull day, they were off by thousands, and I might say tens of thousands; indeed they were

going so thick and fast that a young man said to me, as he stood looking, that a swarm of bees had passed over him. He seemed rather astonished that they still continued passing and repassing. Though this has been a backward spring, I think bees have progressed very well, and appear to be in good order to take advantage of this favourable change in the weather.—JOHN WALTON.

Killarney, May 1st.—My bees did very well last year. I got 600 lbs. from ten hives, and only two swarms. I got 130 lbs. from my best stock, the queen of which is four years old. From the same hive I got 120 lbs. in '85 and 75 lbs. in '87, which was a very bad year. We have no foreign bees in this locality, and no *new blood* has been introduced at this side of the 'flood.'—F. J. M'DONOGH.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

G. DOWNER.—*Honey.*—We do not think so slightingly of the honey as you appear to do. Its peculiar flavour is not to us objectionable. There is no disagreeable smell about it. The bees no doubt will be glad to have it. It will not in any way be injurious to this year's crop.

THE VILLAGE BLACKSMITH.—1. *Working Sections.*—Your plan of working sections appears to be a simple one when two bee-way sections are used. With you it would be found easy of practice, but with others the question would be, What is the cost of the hoop-iron frame and the screws; how are these to be procured by one who is not a 'village blacksmith?' 2. *Frame for Extracting.*—With regard to the frame, something similar has been suggested by Mr. W. B. Carr, of which we hope to hear a report further on. There is no object in using a middle bar unless to steady a full sheet of foundation. If a triangular piece of foundation is used as you suggest, the probability is that the lower corners and sides would be filled with drone-comb.

E. CLOWES.—*Bees Deserting Skep.*—From particulars given we should say your bees were unable during a sudden chill to keep up the necessary warmth, consequently many deserted, and, joining other hives, so weakened and disheartened the remainder that they swarmed out; a few of the more loyal bees would be sure to remain with the queen. The queen might, after being in a warm room for an hour or two to get lively, have been introduced to a queenless colony, but the probabilities are she would have proved of little real use.

W. RIGDEN.—*Doubtful Queens.*—We should recommend you to unite the two doubtful hives, and if in a week's time you still find the eggs placed irregularly, as detailed by you, remove the queen, introduce a frame of eggs (just hatching) from your other colony on the third day, cut out all queen-cells which may have been commenced on any of the old original combs. Repeat on the sixth day if any more have been started on any comb except the one introduced. Destroy all except two on that comb.

W. TRUSLOVE.—*Transferring.*—Do this on the very first favourable day. Stimulate gently, but *regularly*. Sorry to hear of your unsuccessful wintering. Your bees had dwindled owing to the continued bad weather preventing breeding. You did wisely to unite. Better one strong colony than two weak ones.

F. W. PUDSEY.—*Andrena.*—The specimen forwarded belongs to the family *Andrenidæ*, of which there are about eighty British species. The specific name of the one sent is *Andrena fulva*. The specimen is the female; the male is a small black bee, very different in appearance from the bright, golden-tinted colour of his mate—so dissimilar, indeed, are they that entomologists at one time were very doubtful as to their relationship, but by observation of them in their burrows this was satisfactorily established. These bees appear in great numbers about the time of the apple-blossoms. After a time the fulvous pubescence, through exposure to the atmosphere, wears off, and the female's colour fades into a pale yellow, and that of the male into a dull gray. They burrow in the earth, their tunnels varying from five to six inches in depth. The architecture of their cells, and their provision for their young, are an interesting study.

E. H. LATTY.—The name of bee forwarded is *Melecta armata*.

H. J. S.—1. *Excluder zinc.*—In our pamphlet on *Doubling and Storifying* we say, 'We have long since discontinued the employing excluder-zinc, as we have found that it interfered with the work of the bees, and that we always got much more honey without its use than with it.' 2. Allow not less than a quarter of an inch, and not more than three eighths, between rack and frames.

RECEIVED from Mr. C. Redshaw, South Wigston, Leicester, his Catalogue of Hives and Bee-keepers' Appliances (20 pages). This catalogue is a well-assorted list of the various appliances required by the bee-keeper. Our attention was especially drawn to a very simple wax-extractor, with directions for use; also to a suitable exhibition section case for shows, grocers' shops, &c. With the catalogue we received a sample of Mr. Redshaw's honey labels, which are neat and effective.

RECEIVED, the schedule of prizes for the fifth annual show to be held at the Market Place, Aberdare, on Thursday, August 16th.

CORRECTION.—We omitted to state that the letter on 'Honey,' p. 215, was taken from the *Bee-keeper's Magazine*.

*** *Several replies are postponed till next week.*

Business Directory.

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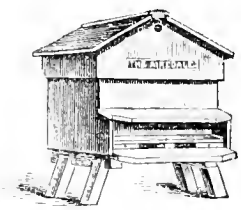

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THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

BRUSSELS APICULTURAL EXHIBITION.

We are requested to announce that the time for application for space at the above exhibition has been extended from the 15th of May to the 20th of June. We may remind our readers that this exhibition will be held from the 11th to the 23rd of August.

PRACTICAL WORK IN THE APIARY.

CROWDING HIVES.

If the instructions we have given for stimulative feeding have been properly carried into practice, hives should now be crowded with brood in all stages of development, and the numbers of the bees will be rapidly increasing. We examined two hives a few days ago which were crowded with bees and had thirteen frames of brood. These hives had racks of sections placed upon them as the bees were already gathering honey from the fruit bloom. The next day two frames of brood were removed, and it was found the bees had taken to the sections, in which they were busily at work. In districts where there are orchards, bees should be by this time sufficiently forward to take advantage of the honey flow. All strong hives should be immediately supered, otherwise, if they are cramped for want of room, and have no place to store what they collect, they will make preparations for swarming. If we wish to take advantage of the honey flow coming on now, strong colonies may have two frames removed, and the space closed up with division boards. This will crowd the bees in the lower storey and force them up into the sections placed above. The frames that have been removed may with advantage be given to hives that are not so strong. Notwithstanding the addition of supers the now rapidly hatching bees will soon require more room, and this we can give them by moving the division boards and giving them an empty frame on either side of the brood-nest as they need it, not increasing beyond ten frames. As soon as the sections are two-thirds full they should be lifted and another set placed beneath. A third can be given if required, and should be placed beneath the two first. In this way room will be provided slightly in advance of their requirements and swarming prevented.

It must be borne in mind that when the bees have once got the swarming fever and make preparations by constructing queen-cells, it is very difficult to prevent them from swarming. They do not usually make preparations until honey is coming in plentifully and they feel cramped for want of room. Give them plenty of room above, and although crowded below they will not think of swarming. Some recommend removing frames of hatching brood, but this we do not like because the queen requires empty cells in which to deposit her eggs, and it is these hatching bees that supply her with such cells. Weak hives should still be encouraged to develop in readiness for the main honey-flow, and empty frames should be added as they need them on the outside of brood-nest.

Warmth is necessary now more than at any season. The nights are still cold and many are not aware how closely the bees cluster at such times. We have insisted on the hives not having more combs than the bees could crowd upon. An examination during the day, especially if it be a very warm one, is deceptive, and some imagine that if they see bees on all the combs they are sufficiently crowded. This is not so, and if the same hive were again examined late at night or very early in the morning, it would be found that probably there would be few, or even no bees on the outer combs. We construct our division-boards so that they come within half an inch of the bottom board, giving bees room to go into the space on the other side. We then crowd the bees so that they not only cover the combs but overflow into the space beyond. At night if we still find a few bees on the outside we are satisfied that there are enough to cover the combs and all the brood. Should we find that there are no bees on the outside, we take away a frame or two as may be required from the brood-nest and push up the division-board. We are then quite certain that we have made all safe and that the brood in the combs is not likely to become chilled by the cluster of bees receding. Chilled brood occurs only in hives badly protected and when the brood-nest is too large for the number of bees. It is a fruitful source of disease, and every precaution should be taken to guard against it. Put plenty of blankets over and round the sections to keep them warm.

GLASGOW INTERNATIONAL EXHIBITION.

This exhibition was opened on Tuesday, the 8th May, in the finest of weather, and under the most favourable auspices. The Prince and Princess of Wales had a most enthusiastic reception, and were so fascinated with the exhibits that their stay in the exhibition was much longer than intended. Bee-keepers will be interested in knowing that it was arranged, had time per-

mitted, to draw the attention of their Highnesses to the exhibit of honey and appliances, shown in Court 21, by Messrs. E. and J. D. McNally, of Rutherglen and Springburn. The executive considered that the design in honey-comb, 'God save Queen Victoria,' was specially worthy of being brought under their notice. Although this part of the programme had to be cancelled, the Messrs. McNally had the honour of presenting H.R.H. the Princess of Wales with a beautiful case containing three samples of Scotch honey. Mr. E. McNally was introduced to the Prince and Princess by Sir Archibald Campbell, Bart., M.P., and on handing over this unique little present, they seemed greatly pleased, and remarked that it looked very pretty.

On the opening day, a small observatory hive on the Messrs. McNally's exhibit caused considerable attraction, and altogether this venture on the part of these gentlemen seems likely to result beneficially to themselves and to bee-keepers generally.

BEE-KEEPERS' VOCABULARY;

Or, Glossary of Technical and Scientific Words used in Works upon Bee-keeping.

American cloth.—Oil-cloth more or less glazed on one side, which is used on the tops of the frames under the quilt. Enamel cloth.

Amœboid. (*Gr. amoibe*, change, alteration, and *eidos*, form.)—Applied to the blood-corpuscles of the bee from their constantly changing their form similar to an amœba.

Anal. *a.* (*L. anus*, the fundament.)—Pertaining to the anus, or excretory opening.

Analogue. *n.* (*Fr. analogue*, fr. *Gr. ana-logos.*)—A structure which corresponds with, or bears a great resemblance to, some other structure depending upon similarity of function. Called *analogous*, or *analogues* of each other.

Analysis. *n.* (*Gr. analysis—ana*, up, and *lusis*, fr. *luein*, to loosen.)—Separating a compound body into its constituent parts. The component parts constituting pure honey and wax being well known, any admixture of adulterants can be detected by analysis.

Analyst.—One who analyses; a chemist expert in analysis.

Anatomy. *n.* (*Gr. anatome—ana*, up, and *tomos*, a section, fr. *temnein*, to cut.)—The study of the structure of animals and the nature and general properties of the separate substances of which the body is composed.

Andrenidæ, Andraenidæ. *n. pl.* (*Gr. andrōn*, an apartment.)—A family of solitary bees varying much in size and habits. They make their nests in sand-banks, decaying wood, straw, and burrow in similar places. Nearly seventy species of *Andrena* are found in England, and their tunnels with nest at the end may generally be found in dry and stony soils.

Androgynous—Androgynal. *a.*—Uniting the physical character of both sexes; hermaphrodite.

Androgynus. *n.* (*Gr. aner*, a man, and *gune*, a woman.)—A hermaphrodite.

Anguiculi. *n. plur.* (Probably a corruption from *L. unguiculus*, a little finger-nail, dimin. of *unguis*, a claw.)—The claws on the foot of the bee by which it clings to rough surfaces, and which enable bees to hang on to each other and suspend themselves in clusters.

Anomalism. (*Gr. ana*, not; and *homolos*, even.)—Irregularity; deviation from the common rule.

Anopsy. (*Gr. ana*, without, and *opsis*, sight.)—Want of sight. Albino drones are said to suffer from anopsy.

Antagonist muscles. (*Gr. anti*, against, *agonistes*, a combatant.)—Those which act in opposition to each other, such as abductors and adductors, flexors and extensors.

Antenna. *n. plur. antennæ.* (*L. antenna*, a sail-yard).—Commonly called feelers or horns. Slender jointed bodies appended to the head of bees and other insects containing the organs of smelling, feeling, and considered by some to be also those of hearing. They comprise the *scape*, or basal joint, and the *flagellum*, the terminal part consisting of a number of smaller joints. Collectively these joints number twelve in the workers and queens, and thirteen in drones.

Antenna-cleaning apparatus.—This consists of a semi-circular notch, furnished with a comb or *pecten* situated on the upper part of the *tarsus* of the leg. On this falls a spur with a projection, or *velum*, attached to the lower part of the tibia, or next joint, above. The two combined form a circular opening into which the antenna is placed, and when drawn through is cleaned of all adhering pollen. (*British Bee Journal*, vol. xiv., p. 43.)

Aphides. *n. plur.* (*Mod. Gr. aphis*, a plant-louse.)—Small insects known as plant-lice, living by sucking the juices of plants. At the extremity of the abdomen, they have two horn-like spines from which exudes the saccharine fluid called honey-dew.

Aphidian. *a.*—Pertaining to aphides as applied to honey, a sort of saccharine fluid, or honey-dew, deposited by a small insect called an aphis and collected by bees.

Aphis. *n.* (*Mod. Gr. Linnæus.*)—Plant-louse, see *Aphides.*

Apian. *a.* (*L. apianus*, adj.)—Of or belonging to bees.

Apiarian. (*L. apiarium*, neuter of *apiarius.*) Should properly be used only as an adjective, although sometimes used as a substantive.—Pertaining to bee-hives; a keeper of bees.

Apiarist. *sb.* (*L. apiarium.*)—One who keeps an apiary; one who takes care of bee-hives; a bee-keeper.

Apiary. (*L. apiarium.*)—The place where bees are kept; a stand or shed for bees; a bee-house.

Apiaster. *n.* (*L. apiastra*, fr. *apis*, a bee.)—A bird called Bee-eater, a species of *Merops.* Merops apiaster is very common in southern Europe, where it does much damage to hives, being a voracious feeder on bees, but is unknown in Great Britain.

Apiator. Macaronic, and should never be used, being formed on the analogy of *piscator*, though no Latin verb *apiari* is found.—Used sometimes improperly to designate a bee-keeper.

Apiculture. (*L. apis*, bee, and *cultura*, tending.)—The culture of bees; bee-keeping; the art of cultivating bees for practical purposes.

Apiculturist.—One who devotes himself to the care of bees; a bee-keeper.

Apidæ.—The name of the family of insects to which the honey-bee belongs. The characteristics of the family are that they feed their larvæ on pollen, or honey and pollen. It includes several genera, of which *apis* is one.

Apifactory. Obs., rare.—An apiary kept for economic purposes.

Apifacture. Obs., rare. (*L. apis*, bee, and *factura*, making.)—The work of bees.

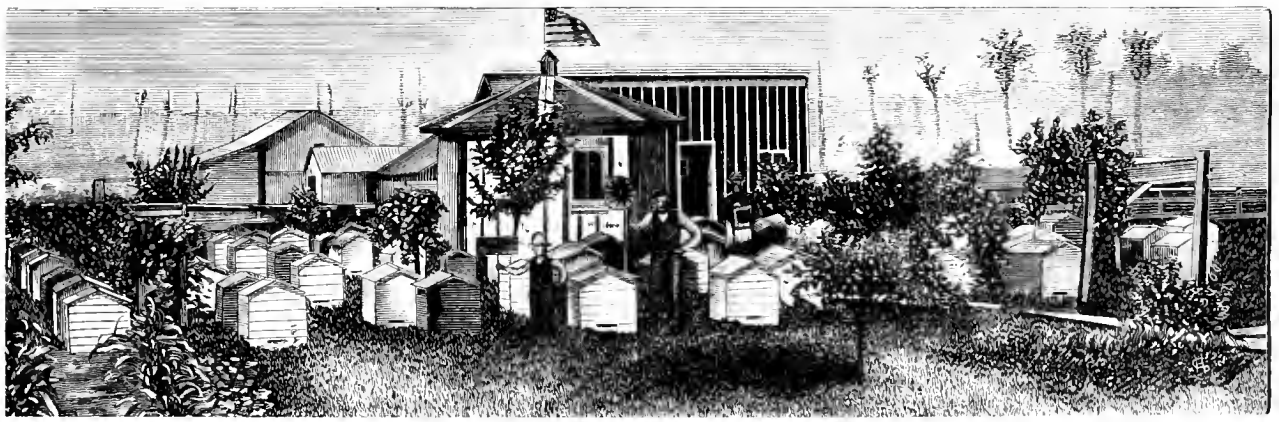
Apiology. A hybrid word (*L. apis*, and *Gr. logos*, discourse.)—Bee literature; literature of bee-keeping.

(*To be continued.*)

GEORGE E. HILTON, OF FREMONT, MICH.

The accompanying illustration shows the apiary of Mr. Geo. E. Hilton, of Fremont, Mich., which contains about ninety colonies of bees. The octagonal building in the centre is the honey house and extracting room. The little piece of walk at the right leads to the dining-room door, and the walk running to the honey-house runs close to the dwelling, which is just cut off at the right of the picture.

The tallest person in the foreground is Mr. Hilton with his favourite hiving basket in his hand. The boy at his right is his little nephew and namesake, Geo. D. Hilton, while Mrs. Hilton stands on the walk further back. A new factory now stands to the right of the



buildings, at the back of the lot, and has been built since the picture was taken.

The hives are painted, and so arranged that there is first a red, then a white, then a blue one in every direction, the rows running straight east and west, and north and south; the hives facing the east.

Mr. Geo. E. Hilton is an energetic and progressive apiarist, and we present an illustration to show his per-

sonal appearance, and have secured a biographical sketch, from which we extract as follows:—

Mr. Geo. E. Hilton was born August 25, 1846, in Bedfordshire, England, near the spot where John Bunyan wrote the world-inspiring book, *The Pilgrim's Progress*, while incarcerated in Bedford jail. His parents moved to America when he was between five and six years old.

He says that he was always attracted to bees, and was never afraid of them from his earliest remembrances, and that he 'lined' a bee-tree from bees working near the kitchen when only twelve years of age, and the cutting of that tree resulted in his having all the honey he wanted for the first time in his life. He often said that when he became a man he would keep bees. He often sat by the side of an old log-gum watching the 'tireless little workers,' and enjoyed it much better than the sports usually indulged in by other boys.

His first colony of bees was a present from his wife; the parties of whom she bought it had another, and he bought that. This was in the summer of 1877; the two were increased to four colonies, but being on odd-sized frames they were soon transferred to the American frame, and increased to six colonies; but finding too much honey along the top bars, and hearing of the Langstroth frame, they were again transferred, and from that time until the present his success has been very gratifying. His honey crop was largely in the comb, and for the past eight years his average per colony has been about seventy-five pounds. The past season was the poorest one.

Mr. Hilton has a good library of books by the best authors on bee-culture, and takes nearly all the bee periodicals. He put the first sections of comb honey on his home market which were ever seen there, and now has a large trade with surrounding towns, seldom having to ship to the large cities. He has helped many to start in the business, and Newaygo county is fast coming to the front as a honey-producing county.

A local organization, called 'The Fremont Progressive Bee-keepers' Association,' exists, of which Mr. Hilton is President. He has always taken great interest in Convention work, believing it to be one of the best sources through which to receive and impart knowledge. He has attended the 'North American' whenever it has been within his reach, and has never missed a meeting of the Michigan State Convention since his first attendance in 1881. He was elected President of that body in 1886, and re-elected in 1887.

Mr. Hilton, in the Fremont *Indicator*, remarks as follows concerning East Saginaw, where the last Michigan State Convention was held:—

'Space will not permit me to speak of all the favours shown us while there. For cleanliness of streets East Saginaw is next to Detroit. For modern architecture in public and private buildings, taste and ornamentation, certainly she stands at the head. The newspapers, too, gave us every attention, devoting nearly a column morning and evening to the proceedings, and none but favourable comments appeared on their pages, which showed their reporters to be gentlemen in their profession, whether we deserved it or not.

'The bee-keepers of Michigan will long remember their visit to East Saginaw. The address of welcome by Mayor H. M. Youmans was enough to make every one happy all through the session. But, not satisfied with this, he invited us in a body to look over the fire department. Here an alarm of fire was sounded two and a half miles away, and in the twinkling of an eye the gas lighted, the horses attached to the hose cart, the doors flew open, and away they went—the whole thing, except the muscles of the men and horses, being moved by electricity.'—*American Bee Journal.*

Foreign.

HOLY LAND.

During our detention at Jaffa, occasioned by a violent storm which prevented our embarkation on the day appointed for the commencement of our voyage by the Syrian coast to this city, we were enabled to make exploration into various matters connected with this key to the Holy Land; and I hope the incredulity of your readers will not be called out when I tell you that there are in the famous groves of Jaffa 500 gardens and the enormous aggregate of 800,000 orange and lemon trees, from which there were last year exported to Europe 20,000 boxes of oranges of the peculiar, oblong, lemon shape now so well known in England, besides an enormous number of smaller, round oranges not adapted for distant exportation, but extensively consumed nearer home. Out of this enormous exportation and extensive consumption, showing the vast extent of these groves, there has arisen another special industry in the collection of orange-blossom honey from 500 bee-hives, under the control and management of five brothers, very active and sensible men who came from Germany. On our arrival at Jaffa the air was perfectly laden with the perfume of orange-blossoms, on which was being displayed the activity of, I suppose, some millions of little active workers, who were

'Gathering honey all the day
From every opening flower.'

The bee-farm is located on the margin of the groves and Plain of Sharon, but in addition to this extensive farm of orange-blossom cultivators, these spirited five brothers have established other farms on the hills of Judea, where wild thyme gives another opportunity of gathering honey of a somewhat different character from that of Jaffa; the wild-thyme honey is brown, while the orange-blossom honey is white. Of all honeys I ever tasted, whether that of the heather of Scotland, the white or brown honey of Switzerland, or the far-famed Hymettian of Athens, I never tasted any so delicious as that of the orange-blossom honey of Jaffa, of which last year 30,000 lbs. weight was collected. This year, as with many crops of agricultural and other produce, there is a falling off in the supply, owing to the long, dry season of the district. Nevertheless, I was so impressed with the value of this article, and its new feature of industry, that I purchased 100 lbs. for distribution amongst my home friends and the connoisseurs in honey, and especially with the view to the opening of a new feature of commercial enterprise which the bee-farmers earnestly desired.

In addition to this interesting information relating to the orange groves, I learned from the same informant (to whom I have referred) that special colonies are now being planted in the plains of Sharon, and all round this old city of Jaffa. Four of these colonies have been established by the eminent bankers the Rothschilds, who have bought lands and have built houses upon them, one of which colonies has been especially provided for, and is occupied by poor Jews driven out of Russia. In other cases German settlers are located, and one colony in particular, at Sarona, on the Plain of Sharon, is appropriated to the keeping of cows for the supply of fresh and pure milk and butter to the inhabitants of Jaffa, thus realising the old interesting ideal of a 'land of milk and honey.'—*Extracted from a letter in the 'Glasgow Herald' signed* THOMAS COOK.

BEES IN QUEENSLAND.

It is not generally known that Dr. Roberts has within his grounds one of the best collections of bees and bee-hives in Queensland. Although exceedingly busy in his profession, the Doctor finds time to devote an hour or two now and again to his bee colony, which has now assumed considerable dimensions. There are more than fifty hives in the group. They are nearly all on the Langstroth principle, and for convenience, appearance, and the comfort of the bees, these cannot be excelled. Some of the hives are three storeys high, or, perhaps more correctly speaking, divided into three sections. All are fitted with small frames, and on these are machine-made foundation sheets of wax, upon which the honey-comb is built. Another development, which has been fully availed of by Dr. Roberts, is the section boxes, four of which fit into the ordinary-sized frame and each of which holds exactly one pound of honey. These sections are extremely convenient, either for exhibition or for the sale of honey in the comb. The whole of Dr. Roberts's hives contain Italian bees, which he has bred from an imported queen. This mother-bee was imported at a cost of three guineas some time ago, and although she presents a somewhat ancient and dilapidated appearance, she has been an excellent breeder, and some of her progeny in the surrounding hives are much better looking than their progenitress. Some of the hives contain a few hybrids, but, as a rule, the bees are uniformly Italian, and very pretty, hardworking, and prolific little workers they are. Dr. Roberts is a great believer in Italian bees, and he is of opinion that they are as much at home here as in their native country, because of the similarity of the climates and food obtainable. The supreme advantage of these foreigners is that they have been moth-proof ever since their arrival in this colony. The native bee had become almost extinct in this district, because of the fatal ravages of the bee-moth; but now truant swarms of Italians have taken up their residence in the bush and are rapidly multiplying without interference from the enemy which had been so fatal to the native bees of the bush. Dr. Roberts has bred the whole of his present stock of queens from the imported bee, and he is yet hopeful that many more of her progeny will pass through his numerous nucleus hives before presiding over the larger swarms in the Langstroths. The yield of honey is great, a full hive averaging fully 1 cwt. per year. The means of extracting the honey are very simple. The operator, clothed with a veil and gloves, removes the top of the hive, and, in the majority of cases, the bees are remarkably good-tempered during the process. The frames are gently lifted from the hive and the hundreds of bees gently brushed from the comb with wing or tail feather. An empty frame is replaced, and the bees then set to work and fill it. Dr. Roberts possesses a honey extractor—a very simple but effective piece of machinery—which works on the centrifugal principle. The extractor is in shape like a large milk-pail. It is made of tin, and contains a centrifugal frame made of iron. Into this frame the honeycomb—and each of these combs contains 4 lbs. of honey when filled—is placed. A handle is turned, the comb is whirled round at a tremendous speed, and the honey is thrown out on to the sides of the extractor. It drains to the bottom, and is then drawn off through a tap. The comb, being cleared of the honey, is used again and again until too far gone for further work by the bees. This saves the bees an immense amount of labour in rebuilding the combs, and therefore the yield of honey is greater. This is the system followed by Dr. Roberts, and the only wonder is that a greater amount of bee-keeping does not exist in this most favourable district. The pursuit can easily be made profitable, and it is certainly most interesting and instructive.—*Toowoomba Chronicle, March* 8.

[We are indebted to the Rev. Astley Roberts for the newspaper containing the above description of the apiary of his nephew, Dr. Roberts.—ED.]

QUEEN WASPS are on the wing abundantly in many parts of the country. They should be destroyed.

ASSOCIATIONS.

NORTH OF SCOTLAND APIARIAN SOCIETY.

This Society has just issued this year's prize list with every prospect of a successful show and competition to be held on 23rd, 24th, and 25th of August, and for which the Town Council has granted a site in the Duthie Park. Special prizes, given by the Hon. Lady Aberdeen, the Highland and Agricultural Society, and others, will be competed for, and special efforts are being made by this Society to promote apiculture in the North of Scotland.

YORKSHIRE BEE-KEEPERS' ASSOCIATION.

A very interesting Committee Meeting of the above Association was held at the Church Institute, Leeds, on April 28th. Dr. Dodgson (Hon. Sec. Craven Branch), in answer to the Secretary, said he would make further inquiry, and report, respecting the proposed formation of Branch Associations at Crosshills and Bolton. The Hon. Secretary reported correspondence with Mr. C. Howes, of Cottingham, resulting in the formation of a Hull Branch under very influential, and, consequently, useful patronage.

Mr. W. Dixon, Beckett Street, Leeds, was appointed manipulator at the forthcoming show of the Yorkshire Agricultural Society at Huddersfield.

A new departure was taken with regard to tent manipulation: It was resolved, bearing in mind that skep-driving, &c., formed an important item in the Schedule of Competitions and Prizes of the Yorkshire Agricultural Society, that the lessons taught in the bee-tent should be accompanied by manipulations of frame-hives, sections, and other objects used in scientific or modern bee-keeping, instead of the almost monotonous skep-driving, thus teaching and exhibiting 'the right way.'

The Secretary reported that at the suggestion of Mr. A. W. Henderson he had written an appeal to Yorkshire bee-keepers, which was printed in the columns of the *B. B. J.*, a copy of the *Journal* being sent to every member and to others. The object of this being the formation of district Associations. It is pleasing to notify that since this meeting, still another Branch has been formed, at York, chiefly through the energy of a veteran bee-keeper, the Rev. J. Hodgkinson.

Selected Queries.

[9.] *What size and width of section is the most saleable? Do you consider the two or the four bee-way sections the best, and why?*

The $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{3}{4}$ are in my opinion the best for all purposes. The four-way sections are best, and I believe will be better filled if slotted dividers are used and a passage-way left at the ends and between sections. The bees can then get readily from one side of the comb to the other without leaving popholes.—JOHN M. HOOKER.

$4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{3}{4}$. Two-way are better to handle, better to pack, and are worked cleaner.—SAMUEL SIMMINS.

Weight 1 lb., size $4\frac{1}{4} \times 4\frac{1}{4} \times 2$. Theoretically four bee-way would appear to save time and labour, but whether this is so or not cannot say from experience.—JOHN EDEY.

The ordinary 1-lb. section $4\frac{1}{4} \times 4\frac{1}{4} \times 2$ I find the most saleable. I have worked a large number of both two and four bee-way sections, in some instances mixed in same crate, and have not been able to decide which are best as regards popholes, but I consider the two bee-way sections far preferable for handling, glazing, and storing, to those having four bee-ways.—W. WOODLEY.

$4\frac{1}{4} \times 4\frac{1}{4} \times 2$. Four-way—as less impeding work.—W. E. BURKITT.

I have found the 1-lb. section ($4\frac{1}{4} \times 4\frac{1}{4} \times 2$) the most saleable size, but during the last year or two there has been a readier sale for really good and evenly worked 2-lb. sections ($6\frac{1}{4} \times 5\frac{1}{4} \times 2$) than formerly. Judging from the short experience I have of the 'four-way sections,' used with slotted dividers, I prefer them to the 'two-way,' since the comb-surface is more evenly finished and sealed and there is an absence of passage-ways at the corners, when the former are used.—GEORGE RAYNOR.

1. The 1-lb. section $4\frac{1}{4} \times 4\frac{1}{4} \times 2$ in my opinion is the most saleable at present, and likely to remain so. 2. The four bee-way, proper separators being used, the bees have free passages from section to section, diminishing the probability of popholes, as well as inducing the bees to take more readily to the super.—ROLAND GREEN.

During the past season I found the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ inch section by far the most saleable. Should the demand for them be the same this year I would never hesitate to work almost exclusively the narrow section. Yes, by all means the four bee-way section is the best, they are quicker filled, have fewer popholes, and consequently look neatest.—WILLIAM MCNALLY, *Glenluce, Scotland.*

$4\frac{1}{4} \times 4\frac{1}{4} \times 2$ wide is the best, *vide* my remarks on the subject p. 193. If divisional trays are used the two bee-way sections are best, but if not the four; equally good harvest can be obtained with either.—W. N. GRIFFIN.

I think the $4\frac{1}{4} \times 4\frac{1}{4} \times 2$ inch sections sell the best. I have quite discarded the 2-lb. sections as I could not sell them. I only experimented with one crate with four bee-way sections last year, and then rather too late in the season to give it a fair trial, so cannot say; I like the two-way sections best for handling.—JOHN WALTON, *Honey Cott, Weston, Leamington.*

1. $4\frac{1}{4} \times 4\frac{1}{4} \times 2$ inches wide, I find the most saleable. 2. Two bee-way, as they are not so liable to damage by being bruised in handling as four bee-way sections, and they have a better appearance when complete.—H. WOOD.

$4\frac{1}{4} \times 4\frac{1}{4} \times 2$. The four bee-way sections are the best, but is not of sufficient importance to warrant a bee-keeper going to the expense of altering all his present plant. They are finished off more neatly.—W. B. WEBSTER.

$4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{3}{4}$. If the operator has no confidence in working these, then $4\frac{1}{4} \times 4\frac{1}{4} \times 2$ wide are next best. If sections two inches wide are used, and of necessity dividers, the two bee-way are filled equal to the four bee-way. The breaking up of a wax-secreting and comb-working cluster is too effectually done by dividers to be compensated (?) by additional centre end passages and slotted dividers; but if $1\frac{3}{4}$ inch wide sections are worked dividerless, four bee-ways are indispensable, and with outside end passages only as fair a chance for perfect work is given to clustered bees as is possible in sectional work.—JOHN H. HOWARD, *Holme, Peterborough.*

[10.] *Does it pay best to use full sheets of thin foundation in sections, or starters only? Do you like the flat-bottomed or the natural base best? Which will the bees commence to work on and draw out first? How many superficial feet to the pound do you think the best thickness?*

Full sheets of thin foundation will pay best to use in sections. I prefer the natural base, and I think the bees take to it better, and work it out first; although the flat bottom is less liable to sag. There should not be less than ten feet superficial of thin foundation to the pound. Messrs. Dadant supply some extra thin twelve feet superficial to the pound.—JOHN M. HOOKER.

1. Full sheets by all means. 2. Natural base, though I do not condemn Van Deusen's excellent foundation.

3. They commence on either readily, but always convert thin flat base to the natural shape. 4. Nine feet, or slightly more or less according to the mill it is made on.—SAMUEL SIMMINS.

I. Full sheets except when sections are three inches wide in a case, then it is preferable to use sheets two-thirds the depth of section in the centre ones only. 2, Natural base. 3. Natural base. 4. About twelve superficial feet.—JOHN H. HOWARD, *Holme, Peterborough.*

1. Full sheets. 2. Natural base. 3. The natural base foundation. 4. Twelve.—W. WOODLEY.

1. I consider full sheets pay best: if starters only are used drone-comb is invariably built, this has not such a nice appearance when finished, and it also offers a strong inducement to the queen, especially if there is very little drone-comb below. 2. Natural-based. 3. From my experience natural-based. 4. About eight feet.—ROLAND GREEN.

Yes, it pays best in nearly all cases to use full sheets in sections. When honey is scarce in coming in, but sufficient to keep the bees drawing out comb, starters may be used in sections then to advantage. I prefer the foundation with natural-base cells, bees will take to either quickly during the honey flow. Ten to twelve superficial feet to the pound is to be preferred.—WILLIAM MCNALLY, *Glenluce, Scotland.*

Full sheets of foundation are much the most profitable. Have used both with equal results, if it is good and pure foundation do not think it matters much. The thinner it is for sections the better.—WILLIAM N. GRIFFIN.

Yes. Full sheets in preference to starters. I like the very thin flat-bottomed foundation best; have not noticed particularly which kinds the bees work on first, nor how many feet superficial to the pound.—JOHN WALTON, *Honey Cott, Weston, Leamington.*

1. In my opinion full sheets. 2. Natural base the best. 3. Natural base. 4. Twelve feet to the pound.—H. WOOD.

Full sheets. Either natural base or 'Pelham.' The bees will *commence* to work on either at the same time, but will draw out the natural base or 'Pelham' first. With flat bottom there is more chance of 'popholes,' the septum being very frequently removed by the bees. Flat bottom is more easily made. Any thickness so long as the septum is sufficiently thin. With 'Pelham' if properly made, ten feet to the pound gives good thick walls and thin septum.—W. B. WEBSTER.

I cannot answer this, having only used starters of thin foundation hitherto.—W. E. BURKITT.

Full sheets. I much prefer the flat-bottomed. The bees have no preference. Strong colonies in normal condition, and a plentiful honey flow, are the only requisites. I use the thinnest American flat-bottomed foundation, which can be procured, transparent, and about twelve square feet to the pound, and would use a lighter if obtainable.—GEORGE RAYNOR.

Use full sheets every time. Natural base best, have used both, but do not notice any different as to time. Twelve feet superficial to 1 lb.—JOHN EDEY.

Correspondence.

SELECTED QUERIES: INFORMATION DESIRED. (1624.)

[1632.] 'R. M.' desires information as to Query 7, at the same time misquotes me. 'If *strong*' stocks (not weak) were found queenless, say at the latter end of April, rather than unite I should put them into a queen nursery, and heat by lamp or gas to about 20° over outside temperature, and keep supplied with food. This would probably cause them to start cells. By the time the queens would fly drones would be ready, and the young queens come in very useful if helped with brood at first. Bees of course fly in the open. Have not found it necessary to do more than feed drone-rearing hives on warm syrup.

Probably queen-nurseries would not pay every bee-keeper to use, but we have found them handy for a variety of purposes during three or four seasons. They cost from 25*s.* to 50*s.* to make, according to size, &c.—this by the way.

I think select rearing might be practised to greater extent than it is with advantage. Two years ago we reared thirty per cent of queens pure, and this year I found drones on an examination on April 30th. This in a late year, when swarming will be at least a fortnight later than usual.—JOHN EDEY.

SELECTED QUERIES: INFORMATION DESIRED.

[1633.] Your correspondent 'R. M.' at page 239 of *B. B. J.*, asks a few questions under the above heading. Permit me to reply briefly to the questions more particularly connected with my name. Referring to my answer of selected query No. 7, I said, 'At the end of April or beginning of May a frame of brood may be given to a queenless colony from another stock, to hatch a queen, provided also that precaution be taken to have drones flying at the time for successful mating.' By giving a strong queenless colony at beginning of May a frame of brood to raise a queen it will be well-nigh the end of May before the queen will be hatched and ready to meet the drone. Living in the south-west of Scotland, which may be considered as enjoying the mean temperature of the British Isles, I have during the past ten years noticed that drones were flying in my apiary from the 20th to the 28th of May each year. The drones were all produced naturally. I based my reply to query referred to according to conditions existing in my own district. If 'R. M.' desired drones from a special stock to mate the queen, he could insert in middle of the brood-nest a drone-comb, about a week previous to the time of giving the queenless stock, the comb of eggs and brood wherewith to raise the queen. He will thus ensure drones to be flying at the right time. With our very limited space in answering these queries, it is impossible to go into detail, but for my part I am always willing to clear away any mist that may be hanging over my answers.—WILLIAM MCNALLY.

SELECTED QUERIES.

[1634.] Your selected query for May 10th.—The questions are appropriate and well timed, the answers cannot fail but to be of great service to your readers. Your correspondents having said so much we would ask them to say more. The first question, 'What should be done with weak stocks in spring?' A great proportion of the answers are, 'Unite.' The exception, 'Should a young breeding queen be at their head, then preserve the stock.' If it would be profitable to keep a nucleus through winter to save a young fertile queen to replace winter's losses then it would be equally profitable to keep a weak stock with a young breeding queen to repair losses during the summer. Mr. Simmins would give the queen to the first stock which sent off a swarm. Would he give a queen's cell to the weak stock from which the queen had been removed?

The second question,—'How can they be strengthened?' Answer:—Contract brood nest, pack warmly, feed quietly, narrow the entrance. Mr. John Walton says, 'If not too weak, shut up close.' Does he propose to close the hive and not allow the bees to fly? It would save the bees from being robbed, and the bee-keeper from some trouble, if they could be kept healthy under such treat-

ment. What is Mr. Walton's experience with such management? What is the experience of bee-keepers in general?

Some would strengthen by giving 'bars of brood.' Mr. 'Useful Hints' would 'change the stand of the weak stock with a strong one,' when the bees were flying on a fine day. This, no doubt, would strengthen the weak stock, but how would the other fare? Would there be two moderately weak stocks? Can the stocks be too strong at the opening of the season? If so, why should the hives be doubled to improve the yield of extracted honey?—R. M.

WEAK COLONIES IN SPRING.

[1635.] In the answers to Selected Query No. 8, all the authorities advised one or other of two courses, viz., either to unite or to strengthen the weak colony at the expense of a stronger one.

In 1886 I used a different plan and it seemed to me to be successful. The spring was a very late one, and I had one weak colony, on 24th of April, on four combs with brood in two of them. I had also another colony which was pretty strong, and I thought I should endeavour to try and utilise both queens by letting the queen in the weak colony lay eggs, but removing the young brood to the other hive to be fed up. I therefore, on the 24th of April, removed the brood comb which contained the youngest brood, replacing it by an empty comb. On the 8th of May, and again on the 10th of May, I did the same thing. This enabled me to super the stronger hive on 17th of May. On the 30th of May the weak colony was on eight combs with brood in five of them, and on the 3rd of June I returned the stronger colony on foundation, leaving two brood-combs and gave the remaining seven brood-combs to the weak lot, doubling them, there being enough bees to take charge of the additional combs. The season was a bad one, but the weak lot gave me over fifty-five pounds of honey. The stronger lot which I worked with sections, gave me forty-two pounds. Both queens were pure Italians. I think this plan if worked out properly might lead to good results.—T. F. L., *Brondesbury.*

BEE TEACHINGS.

[1636.] The bee, from our childhood, has been set before us as a model of industry; but even Dr. Watts himself—whose simple verses embody this useful lesson—unless he kept bees, could have had but little conception of the ceaseless activities of these busy little creatures. The valuable lesson thus taught requires—in these columns at any rate—no further dilating upon, but not to have alluded to it at all would have been as reprehensible as the conduct of the players, who, professing to play 'Hamlet,' left out of the play all mention of the illustrious Prince of Denmark!

The thoughtful bee-keeper must often have been struck with the *unquestionable unselfishness* of a bee's work. Here, at any rate, is a less repeated lesson, that it would be well for many of us to lay seriously to heart. The bee is no miser, no lover of self. The welfare and the comfort of others enter into their consideration. For whom does the happy virgin toil? Certainly not for herself! She builds a house of marvellous design, but not for her pleasure alone! She 'gathers honey all the day,' but not for her consumption! Bees that are yet unborn, whom she may never see, shall eat the fruit of her industry when the toiler shall lie on the cold, bare ground, shrivelled up, forgotten, dead! for as Homer, ages ago, wrote:—

> 'Like leaves on trees the race of bees is found,
> Now green in youth, now withering on the ground;
> Another race the spring or fall supplies,
> They droop successive, and successive rise.'

Naturally all animals love their young. They would lay down their lives in gallant defence of their little ones, would they not? But the bees teach us to care for the offspring of others. In early spring virgin-sisters brave the biting wind, leaving the warmth and comfort of the hive, in order to procure pollen for the baby-bees. How tenderly they care for them, how zealously they guard them, how faithfully they feed them! And the point to be borne in mind is, that *they are not their children.* Sons and daughters of their mother-queen, heirs of the treasures of the hive—true, but not their offspring! But, all the same, greater love they could not show towards them than they do.

The foolish question is often asked in these days of ennui: 'Is life worth living?' The question comes, not from the lips of those who toil from rising sun till evening shadows for daily bread, but from the surfeited sons of earth, who would do well to take their answer from the hive. *A bee's work is a bee's happiness.* There is the grand secret! No talk of ennui, of collar chafing, of bad seasons, of unpropitious weather, of want of ease. Happy bees!—happy in their work, singing at their daily toil, fulfilling their allotted tasks, till working-days are o'er!

Politics seem out of place in a journal devoted to bees and, unfortunately, I risk the Editor's wrath in venturing to draw political principles from the hive. Spare me, O mighty journalist, if our opinions happen to clash! My knees tremble as I pen the next few paragraphs, feeling conscious that I have got on dangerous ground. How loyal the bees are to their sovereign! How they venerate her, provide a royal palace for her abode, obey implicitly, unquestioningly, all the laws of her wise administration! One happy community—under the sceptre of one sovereign lady. No cries of 'Dismemberment!' of 'Disintegration of the Empire!' 'Down with royalty!' 'We are all equal!' But stay, I thought I heard the buzz of some angry reader in my ear. I will pull up ere I get stung!

Punch's well-known advice to those about to marry is, 'Don't!' The bees say, 'Don't marry on love. Don't rush into an improvident marriage. Be wise. Cut your garment according to your cloth, for—

> '"The prescient female rears her tender brood
> In strict proportion to the hoarded food."'

Shakespeare avowed that 'home-keeping youths have ever homely wits;' and however true this may be, there is also an opposite truth. The domestic work of the hive, I believe—such as the construction of cells, the making of bee-bread, the feeding and sealing up the larvæ—is entrusted to the care of the young bees. The collecting of the pollen and the honey is undertaken by their elder sisters, who 'not only know their way about,' but are able to withstand the temptations and allurements of their enemies, who dwell outside the camp.

Here, surely is a lesson for the daughters of England. Mothers, give your young daughters work to do in the family hive. Entrust the minor domestic duties to their charge. However rich or talented a young lady may be, she will be none the worse wife or mother for a thorough training in simple, but essential, household work.

Young lady readers, please don't scold: I am only telling you what the bees say: it's *their* advice, not *mine!*—J. Eaton Fearn.

COUNTY ASSOCIATIONS.

[1637.] My great interest in the matter, and placed in similar circumstances, must be my excuse for presuming to answer Mr. Hooker's letter (1614). I believe the question is not so much the most suitable day and date and place of meeting of the county representatives, but the *distance and expense.*

Take this county—Glamorgan—for instance. The

chief centres of the members of the Bee Association at the present time are. Cardiff, where the meetings are held; Aberdare, 24 miles from Cardiff, where the Hon. Secretary resides; Bridgend, 20 miles from Cardiff; Neath, 38 miles; and Swansea, 45½ miles. With the exception of Aberdare and Cardiff the rest of the county is practically not represented, and know nothing of the Association except when called to pay towards its support.

If the County Associations are to do any further good the parent society must take the initiative and issue rules and regulations for the formation of sub or district associations. I believe this is already done in some counties, and in others again there are district and separate associations from the county. I do not favour the latter, but better so than as we are now; and this is what ultimately it will lead to if the former is not carried out, or the Society will collapse for the want of interest and funds.—BEE-KEEPER.

NOTES ON BEE-HIVES—SECTIONS.

[1638.] As I have had numerous inquiries respecting the glass sections, described in last week's issue of the *British Bee Journal*, kindly permit me to say the outside dimensions are those of the 4¼ × 4¼ × 2-in. section; the sides are 2 in. wide, and the top and bottom 1⅜ in. wide. Fig. 1 showed the shape or form only, but, of course, the size could be made to order. They may be purchased when advertised in your advertising columns. What I have had made are for my own private use.

When glass dividers are used in connexion with my glass sections, the super is 'a dish to set before a king.' The edges of the glass dividers should be polished, although this is not absolutely necessary; wood, tin, or other dividers may be used.

In looking over bee-keepers' appliance-suppliers' catalogue, I notice in that of Mr. John H. Howard's a section with a groove on all the four inner surfaces in order to hold whole sheets of foundation. I notice in that of Mr. T. B. Blow a section with a groove on all the four inner surfaces in order to hold whole sheets of foundation, and that Mr. T. B. Blow has applied for a patent for his.

Months before Mr. T. B. Blow applied for this patent I noticed Mr. John H. Howard give a description in the *British Bee Journal* and in the *Bee-keepers' Record* of a grooved section as an invention of his own—*i.e.*, of Mr. Howard's.* As the grooved section in wood contains the best method of fixing or holding whole sheets of foundation that can be devised, I shall be glad to know exactly in what way the sections differ. This will also be found interesting most likely to many of your readers.

I have already stated I had made and used a groove on all the four inner faces in order to hold whole sheets of foundation *long before* Mr. Blow applied for a patent, but I never gave a description in the *British Bee Journal* until I began my notes under the above heading, and I might say my sectional honey gained first premiums wherever exhibited, and astonished everyone who saw it, being quite free from pop-holes and other defects.

I also notice Messrs. Abbott make the following statement:—'*The plain groove (not dovetailed) as advertised by other makers, cut free of charge.*' Perhaps they will be so good to make all this plain to us.—T. BONNER-CHAMBERS, F.L.S., *Tref Eglwys, May* 1.

* For date of descriptions I allude, *vide B. B. J.* for April, 1887, and *Record* for May, 1887. I understand Mr. Blow applied November 1887.

THEORY *v.* PRACTICE.

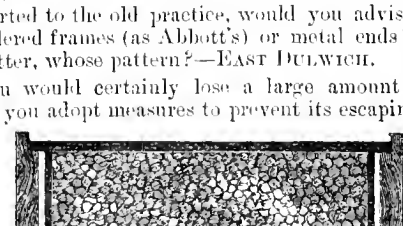
[1639.] Unfortunately for the best interests of bee-keepers, the expression has gained to some extent in the outside world, that they are a lot of theorists, who instead of working for the greatest good to the greatest number, are trying to feather their own nests, by attempting to show (or some of them at least), that they alone know it all, and their appliances are the only ones of value; that their theories alone are worthy of acceptance, and by the use of their hives alone, can bee-keeping be made a success. As to honesty and integrity of purpose, the matter is not at all considered; all that is thought of, being that the theories don't pan out as anticipated, and the hives don't bring in honey when there is none in the fields to be gathered. The great trouble has been that some one of little practical experience, but with a fair knowledge of bee literature, gets an idea into his brain and elaborates it therein, till finally he thinks he has discoverd something new and valuable; then without testing the matter, he rushes the idea into print. No harm would be done if experts only read the matter; but amateurs who read the article are impressed with the way it is put, and in testing find to their sorrow and disgust that failure follows; then comes the trouble, but bee-men of intelligence are condemned as well as the author of the humbug, and bee-keeping suffers thereby.

Patent hives and traps of various kinds have been offered that possessed no merit whatever, yet were claimed to make the man rich who bought them. The 'Cottons' of the bee-world are still alive, and every season we find them putting in their work. The remedy against all this is for bee-keepers to take a reliable journal, and follow its teachings; by so doing they will steer clear of the humbugs, and save enough in a single season to pay for many years' subscriptions.—J. E. POND, *No. Attleboro', Mass., U. S. A.* (*Canadian Honey Producer.*)

FRAMES WITHOUT SHOULDERS OR ENDS.

[1640.] Having several times seen notices in the *Journal* that yourself and other bee-keepers used frames without any shoulders or ends, &c., to keep them distanced one from another, I cut the broad shoulders off my frames last year, so as to be able to close the frames to 1¼ inches, as advised; but on the expert visiting me in the autumn he asked how the heat was retained, and prevented escaping between the ends of the frame? I could not tell him, but having thought of the matter again lately, I write to ask you what you do to meet this point. I do not know that my bees have suffered, but it does seem to me a good deal of heat must escape between the ends of the top bars, and thence along inside the hive side under the quilts, until it communicates with the space behind the dummies, which would not escape were broad-shouldered frames or metal ends used. Supposing I reverted to the old practice, would you advise broad-shouldered frames (as Abbott's) or metal ends? and if the latter, whose pattern?—EAST DULWICH.

[You would certainly lose a large amount of heat unless you adopt measures to prevent its escaping. The



proper way is to have a piece of wood fixed to the hive, running along the ends of the frames. This will form a rabbet, as shown in the illustration, and closes the ends of frames. The division boards are also made to fit this rabbet, so that when the quilt is on the frames no heat can escape. This rabbet is also useful if you use

metal ends, as there is always an escape owing to the conduction of the metal. Your hive being constructed for broad shoulders is better suited for such. The Carr metal ends we think the simplest and best, because they at any rate give you the choice of two openings, 1¼ and 1½ from centre to centre.—Ed.]

BEES AND FLOWERS.

Benefits of Bees to Agriculture and Horticulture.

[1641.] From the very 'pointed' argument used by the bee in self-defence, either real or imaginary, the masses believe that the sole occupation of the bee is to sting; and we often hear the remark that 'a bee will go ten rods out of its way, any time, to sting me.'

Let us see if this be true. The bee is never more happy than when hard at work, and at a time when honey is coming in rapidly. There is nothing stingy about them. At that time of the season I have taken from the hives hundreds of pounds of honey without the least protection of either smoke, veil, or gloves.

Why is nectar placed in the flower or blossom? Is it necessary for the setting and maturing of the fruit? The scientific horticulturist says No! Was it placed there for the bee? Again the scientist says No! Then let us examine the mysterious construction of the blossom, and see if we can solve the problem.

The blossoms are composed of one or more leaves called petals. The base of this is called the corolla, and there, as a rule, nectar is deposited. The stamens or pollen-bearing stems—in other words, the male organs of the plant—protrude beyond this nectar, and in order for the bee to secure this much-coveted sweet she must brush by these stamens, and to a greater or less extent the pollen adheres to the legs and body of the bee. It no sooner drains the cup that Nature has filled for a two-fold purpose, than it flies away to another, and here is where the wise economy of Nature is being performed. The bee, in coming in contact with this second blossom, mingles the pollen of the two, impregnation takes place, and all fruits and vines are made to bring forth fruit, 'each after its own kind.' If any doubt this assertion, next spring when your fruits, vines, and clovers blossom, just before they open, with a bag having the meshes small enough to exclude insects, see how much fruit and seed you get from the blossoms thus treated.

In the West, in some sections where the bee and hornet do not exist, they fail to raise pumpkins, for the want of something to fertilise the blossoms. In some of the mid-ocean islands they could not raise red clover seed until they imported bumble bees to impregnate the blossoms. Now the Italian bee is aiding in this grand work.

The bee is the friend of horticulturists and agriculturists, and as there is no insect that increases in such vast numbers so early in the spring when their services are so much needed, they are of more value to the farmer, gardener, and fruit-grower than all other insects.

A man near Boston makes a business of raising cucumbers for the winter markets. I am informed that he has several acres under glass, and until within the past few years he did all the fertilising by hand. This was a most tedious and expensive piece of work, reducing the profits to a minimum. But now, in each section of this vast winter garden, he has a colony of bees, and while the mercury is sporting with zero outside, these little helpers are gathering honey from cucumber blossoms, and at the same time doing the work of many hands; and one great advantage is, that they do their work so much better. The proprietor says that by the old method they never succeeded in fertilising over 50 per cent of the blossoms, but that the bees fertilise at least 80 per cent, thus advancing his industry from a basis hardly paying expenses to one that is profitable.

I might dwell for hours upon things connected with this very interesting pursuit, but I will not tire you, for what may seem interesting to me may be idle talk to you; but let us learn a lesson from the bees, to do all the good we can in this life. The bee that gathers the nectar from, and fertilises, the blossoms, never lives to consume the honey stored for the winter months; but toils on uncomplainingly, and if the season be favourable it not only stores sufficient for the winter's supply, but a surplus sufficient to compensate the bee-keepers for the attention given during the summer months besides, and giving us the only pure sweet known to the civilised world.—*Read at the Fremont Mich. Convention by Geo. E. Hilton.*—(*American Bee Journal.*)

Echoes from the Hives.

Aberdeen, May 8th.—Notwithstanding the fact that we have had a very cold and almost wintry spring, bees are now in fairly good form and give hopes of a few May swarms after all. The rather dry and frosty winter has been favourable, and where good stores and comfortable wrapping had been provided, hives have wintered well. Fruit blossoms and spring flowers are now beginning to unfold to the ever-increasing strength of sunlight as the days lengthen, and in nooks sheltered from the strong winds of the last week good work has been done. In more exposed positions the strength of hives has been considerably reduced by the bees being tempted out by the bright sunshine, and then being overcome by the strong winds. Reports from this district in general are hopeful, but the lateness of the season is everywhere felt, and reckoned to be over three weeks behind the average. We may now hope that with brighter weather and an absence of frost, flowers may not be blasted in the bud, as in recent years, and that after all some leeway may be made up.—G. B. B., *Hon. Sec. N.O.S.A. Society.*

Birch Vale, Derbyshire, May 13.—In North Derbyshire here everything is very late. I wintered with one stock and three of last year's swarms, packing with earth, dust, &c., early in October, as the heather keeps us going here pretty late. One swarm was originally a poor one, and should have been united; this was wintered on four (parallel) frames, the others on seven frames each—two parallel and one right-angled. On 24th March—fine warm day—I changed the weak lot to a new hive, and found them only sufficient to cover three frames, and short of food. I gave them sugar, and on the 8th April gave them warm syrup, but up to the 6th instant found no trace of brood, and found no pollen going in, and had given them up as queenless; but on the 11th instant had another look at them and found the queen, but still no brood. The bees were now very much reduced, so I got a frame of brood from another hive, some yards away, put it with weak lot, reduced them to three frames, and changed the hive to the place of the one I took brood from, putting the robbed hive on site of the weak lot. The bees were flying freely at the time. The other three hives have wintered well, including the one from which I have taken the drone-breeding queen. As I can get no queens about here yet, I have put in the last-mentioned hive a frame of brood and eggs, hoping a queen may be raised to meet the drones now hatching out in this hive. I see your correspondents talking of blossom being out some time ago. We have none out here except gooseberry bloom, which have come out within the last three days, and is now covered with *Apidæ* in all their various forms—my bees, though, being conspicuous by their overwhelming numbers. By the way, I saw the first queen wasps of the year, hereabouts, yesterday—a very fine bright summer day—and killed twelve of them and ten more to-day, the Sabbath notwithstanding. They seem numerous this year here. I found no eggs or brood in my hives up to the 15th April, after which I was absent

till the 6th instant, on which day I found patches of sealed brood. I may say I paint my hives inside and out, floor-boards, and everything, with three coats of oil paint, and find the bees do very well with this. I should be glad of some views as to the best way of working hives for the heather. I don't move to the heather, as we have it close to us here.—'TH. ASPEN.'

Brondesbury, May 14.—Bees hard at work in outer sections—working on gooseberries and fruit blossom.

Springburn, Glasgow.—Since the 1st of May, we have had glorious bee weather. The warm sunshine has allowed examining operations to be carried on without risk or injury to the bees. Should this and next month continue as at present, you may reckon on hearing good reports from Scotland, and I hope also from our friends across the border.—J. D. MCNALLY.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

WM. MITCHELL.—1. *Dysentery.*—The Eastern races of of bees are frequently subject to dysentery. In your case, as there are plenty of young bees, you need have little fear now the weather has improved, of there being an increase of brood-rearing and a cessation of dysentery. We presume the queen is alive, you do not give that information. 2. *Foundation.*—Steep it in warm water at least 90° Fahr., but not much over that temperature; old foundation is very unsuitable.

HERBERT LIVERMORE.—*Queenless Hive.*—You acted very unwisely in transferring so early in the season. When bees are much disturbed in early spring the queen is frequently 'balled' and so killed; it is so in your case the bees raising others from larvæ left in the hive; they would not cease carrying in pollen while there were larvæ and queen-cells in the hive. Continue stimulative feeding and see that the queen is properly fertilised, which now the season is so far advanced is most likely to take place.

A. EVERETT.—1. *Excluder Zinc.*—We never use it, although there is a growing tendency to do so when using any other but sectional supers. 2. *Distance between Bottom and Top of Body Box Frames.*—Three eighths of an inch.

J. S. LAWTON.—*Bees leaving Hive.*—These proceedings of bees are not infrequent during spring; such swarms being called 'hunger swarms,' though they do not always proceed from shortness of stores. A weak colony is more likely to do so than a strong one, in fact we have never come across a case happening with a strong colony in a normal condition.

MRS. W. W.—1. *Storing Honey in Earthenware Barrel.*—It is a most unsuitable vessel. Clover honey is sure to granulate more or less according to the temperature after being once exposed to the air. 60 degs. F. is a very good temperature to retard its granulation. 2. *Trifolium incarnatum.*—This being an annual, is never sown on pasture land. The time for sowing is autumn, as a crop for the following spring for green food, or allowed to grow for hay. Bees obtain a fair amount of honey of a light colour from it. The proportion to be sown is 25 lbs. to the acre. 3. *Doubling.*—Your plan would answer very well, as you would not very materially weaken the other stocks. 4. *Cyprians and Syrians.*—Both these varieties are of an irritable disposition.

W. H. GOING.—*Dead Stocks.*—There are no symptoms of foul brood in the combs sent. One of the pieces had evidently come from a hive that had been robbed. We should therefore suppose that robbing was the cause of death of the the colonies, but with no further *data* than you give it would be impossible to state with certainty.

JOHN HEPWORTH.—1. *Dysentery.*—A slight case of dysentery which will disappear now fine warm weather has set in. 2. *Bees carrying out larvae.*—The colony requires feeding.

A. H.—1. *Stores.*—Your hive is without doubt in a very prosperous condition. 2. *Transferring.*—Now. 3. *Placing on Crates.*—As soon as honey flow sets in. 4. *Keeping body-box free from Stores.*—Yes. 5 *Excluder Zinc.*—We do not use it under section racks. 6. *Tiering up.*—Place first rack on top of second with the bees in it. 7. *Queen Cells.*—Yes, if there are any. 8. *Answers by post.*—Yes, if of a very urgent nature.

J. E. ORPIE.—*Suspicious Comb.*—This is foul brood.

JAMES HOUSTON.—*Dead Brood.*—Arrived in rather a mixed condition, but appear to be only chilled, not foul brood. Feed gently and regularly, and keep them warm and comfortable. Give them syrup in the evening only, and then at the temperature of new milk. Contract the brood-nest so that the combs are covered, and make all tight and cosy.

WOOD GREEN.—*Hiving Swarm.*—Put inch starters only in the frames, and *full* sheets in the sections. If honey is coming in, put sections on at once, and do not feed; but should the honey not be coming in, then feed very gently for a day or two, and put the sections on *after* you remove the feeder. It is the exception for natural swarms to come off except when honey is coming in pretty freely. Oblong excluder is best. As you only put starters in the frames, you can put all the frames in when hiving the swarm.

J. P.—*Moving Stocks.*—Your only safe plan now is to move the stock some cool evening to a place quite two miles from their present, and also from their future stands. Allow them to remain for a week or two or more if you can, then remove them to their new location. If you were to remove them one mile only, you would be sure to lose many.

ENTHUSIAST.—*Removing Bees from Chimney.*—It is very difficult to advise without *seeing* the exact position they occupy. Can you send a sketch, and we will help you if we can?

H. MARRS.—1. *Supering Skep.*—You might get some nice sections from apple blossoms, also from gooseberry. Therefore super at once, and keep warm. 2. *Supering a stock that has swarmed.*—We should prefer to set the swarm on the stand of the parent stock and super it as soon as hived, placing the parent stock elsewhere, but not supering it, as owing to the shift it will have lost all bees that were on the wing when the swarm issued, and thus be greatly reduced in numbers. This mode tends to prevent casts.

F. H. W.—1. *Grubs thrown out.*—This is a sign of starvation, feed at once on either syrup or dry sugar (Porto Rico). 2. *Dead Queens.*—Without knowing where you kept the box containing the queen we should say she died from cold. 3. *Placing swarm on stand of parent stock.*—(See answer to H. Marrs.) Those on the wing *would* take to the new hive. They are heavily laden, and being given ready admittance at once adopt it as their home.

T. NIXON.—1. *Delaying Swarming.*—Your plan will *not* do. Why not make an artificial swarm on Saturday,

thus preventing a watch on Sunday? 2. *Several Eggs in one Cell.* The present cold snap caused the cluster to contract. The queen has been fed to lay, and must extrude the eggs somewhere. Warm nights should adjust matters. That is our experience. 3. *Excluders.*—Adjusters are best. The zinc should never *rest* on the frames, there should be $\frac{3}{8}$-inch space between. 4. We have not tried the articles you name; they are said to be effectual.

A. J. R.—1. *Doubling.*—You will find your questions answered in our 'Practical Work in the Apiary,' of this week. 2. Old queen-cells are of a darker colour, and more rugose than those recently formed.

G. E. Corbyn.—1. *Poor laying Queen.*—Unite and remove defective queen. Super under the circumstances you quote. 2. *Norfolk Association.* Apply to Mr. Jethro J. Rice, 16 Wensum Street, Tombland, Norwich.

W. L. Bird.—*Extracted Honey from Skep.*—Try a shallow super with frames $14\frac{1}{2} \times 5\frac{1}{2}$ placing excluder-zinc over the hole. We should prefer transferring them to a bar-frame hive as the more profitable plan.

Rip Van W.—*Queen thrown out.*—We should say your bees have superseded the old queen. We would advise you to make an early examination to ascertain if *worker* brood is being raised. This is in case the queen may have missed fertilisation.

Amateur.—*Dead Queen.*—This was so smashed on arrival that no opinion can be given. (See reply to 'Rip' above.)

H. J. Savory.—1. *Wax-moth.*—The 'maggot' forwarded is not the larva of the wax-moth. It must have dropped from an overhanging tree. If you should see the larvæ of the wax-moth, you must promptly destroy them either by crushing them, or, if they are wriggling out of the comb, by pricking them out with a pen-knife. 2. *Casting out Brood.*—Casting out brood at this time of the year indicates either the want of food, or, it may be, the removal of brood that has become chilled.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
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Edey & Son, St. Neots.
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Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
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Walton, E. C., 82 Emmanuel Street, Preston.
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HONEY MERCHANTS.

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Howard, J. H., Holme, Peterborough.
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OUR NOTED 1 A HIVE.

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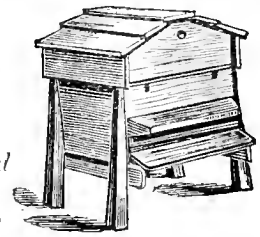

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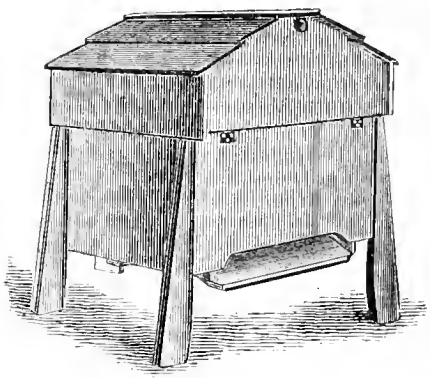

No. 1 B. Fig 1.

In placing this Hive before the public I venture to say that it is one of the most simple and practical yet brought out, and possesses many advantages over the ordinary Bar-frame Hive.

The Floor-board is hinged to the back of the Hive as shown in Fig. 2, and, when in position, is supported by a simple bar of wood across the centre, held in its place by two cleats. The floor-board, as will be seen, can be let down in an instant with the least possible trouble, and as quickly replaced, completely doing away with any difficulty in cleaning, &c.—a great advantage.

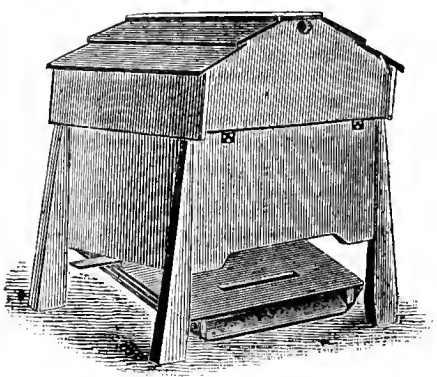

Fig. 2.

The outside walls fall 1½ ins. below the floor-board all round, thus ensuring freedom from damp, as it is absolutely impossible for rain to drive into the Hive.

The entrance to the Hive is through a slit cut in the floor-board about 4 ins. from the front wall, and the alighting board being directly underneath is protected from wind and bad weather, and is always dry. The bottom bar of the third frame from front wall hangs just over the entrance slit, thereby preventing any direct upward draught into the cluster. By means of a metal slide the entrance can be contracted in winter, or in the case of robbing.

There are no projecting pieces on the Hive, such as alighting boards, porches, &c., to get broken in transit.

Price 10/-. Fitted for a Swarm, as No. 1a, 14/-. *A reduction allowed if three or more Hives are ordered.*

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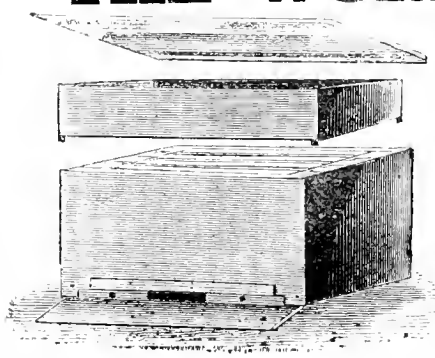

The Hive contains nine frames, Standard size, with metal ends; one dummy; one quilt; has a stout body made of sound red deal; is double walled, and grooved, and has a water groove down each side underneath to exclude wet. The floor-board is hinged, and can by removing two screws be let down for cleansing purposes. There are also a good landing board and two entrance contractors. **Price—Body, Frames, and Roof, 5/-.**

The rim shown between body and cover is made to drop exactly on to the body, and is kept in position by a block at each corner. It is for the purpose of carrying a section crate of twenty-one 1-lb. sections, and thus the whole form a complete and compact Hive. The rim and section crate can be had for 2/6 extra, making the complete Hive 7/6. Six of the frames can be fitted with half sheets of brood foundation for 1/-.

Customers buying the above Hive at 5/-, can at any time obtain the rim and super when wishing to raise section. They are all made to a size, and a fit is guaranteed.

THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

THE REV. L. L. LANGSTROTH.

There is, perhaps, no man living to whom bee-keepers of the present day owe more than to the Rev. L. L. Langstroth, or, as he is termed by our American friends, 'Father Langstroth.' How often in the progress and development of a science or industry the pioneers, those who were amongst the first, and who worked the hardest, very soon become forgotten. It is so in bee-keeping; those who have done the most, and by their exertions have enabled many in the present day to become not only bee-keepers but successful honey-producers, are forgotten and ignored. But this is not all, for those who have benefited by others' brain efforts and experiences are frequently those who do their best to crush them. Do we not find repeatedly that claims are made to inventions and improvements without regard to what has been done before? Names of inventors, discoverers, and benefactors, are frequently forgotten in the eagerness to benefit at their expense. We might mention numbers of instances at the present day, where inventions are used with but slight alteration, and the users deriving a pecuniary benefit, whilst the originators, to whom the invention cost a large expenditure of brain power, many sleepless nights, and perhaps a large sum of money into the bargain, are completely ignored. We have a most striking instance of this in the case of the Rev. L. L. Langstroth. We do not wish to enter into the question of whether Langstroth, Munn, or any one else, was the first to invent the frame, but what we wish to point out is that Langstroth was the first to make the moveable comb hive a practical success, and by his work, *The Hive and Honey Bee*, which is still the standard on the subject, he opened up to the world the improved methods of bee-culture, which have led to the enormous success witnessed at the present time. Does every bee-keeper realise that in using a moveable comb hive he is morally indebted to Mr. Langstroth for the benefit he is deriving from it? And if he does, is he prepared to make some acknowledgment and return for this obligation?

For many years Mr. Langstroth, who is now seventy-seven years of age, has suffered, and only from time to time, and at long intervals, has he been able to take up with his favourite pursuit. We regretted that when we visited America last summer he was not in a condition to see us, and nothing would have given us greater pleasure than to have grasped this veteran's hand and looked into his benevolent face. Ever devoted to the science he loves so well, according to a friendly letter we received from him a few days ago, he was even then, during a period of convalescence, at the apiary of Mr. Heddon studying the capabilities of the Heddon system. His head troubles have prevented him from earning his living, and it is because this master of bee-keepers has been robbed of his means of livelihood by some of those who have reaped the benefit of his labours that he is not now, in his old age, in comfortable and independent circumstances. From time to time small sums have been subscribed, and in 1879 'The Langstroth Fund' was started in America. In that year Mr. Newman visited England, and at a meeting of British and Foreign bee-keepers held at our residence in Horsham, a subscription was started which amounted to about 6*l.* 6*s.*, the whole amount collected here and in America barely reaching 10*l.* Since that time small sums have been remitted to him, but how out of all proportion is this to the benefits conferred by him on the world! It is now proposed in America to raise a sum of money in order to purchase an annuity, and every bee keeper there will have an opportunity to pay some tribute to his great leader.

But why should we stand aloof and do nothing? On another page our correspondent 'Amateur Expert,' in his pathetic appeal, says, 'Let us, as British bee-keepers, give practical expression of brotherly feeling by subscribing to the fund; it will only stimulate his countrymen to do more, and make the annuity the greater.' These sentiments we heartily approve, and think it the duty of the many who have benefited by Mr. Langstroth's labours to do something on his behalf, so that this good old man may pass the remainder of his days in comfort, cherished by the thought that there are noble and honest minds on either side of the Atlantic that do appreciate his efforts, and prove a brotherly love and feeling are ready to recognise them. We shall be pleased to open a subscription list to be called the 'Langstroth Fund,' and earnestly hope that our appeal will be heartily responded to. Let us bear in mind that 'he giveth twice who gives in a trice.'

Donations sent to us, or to Mr. Huckle, Kings Langley, Herts, will be acknowledged in the *B. B. J.*, and forwarded to America. The list of contributions is headed :—

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T. W. Cowan	5	0	0
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PRACTICAL WORK IN THE APIARY.

Hiving Swarms.

The bee-keeper must have hives and all he may require for his swarms in readiness for their reception. If he has decided to have natural swarms, and has made his arrangements accordingly, now is the time when they are usually to be expected. He must keep a look-out for them, for strong hives will frequently throw a swarm without the usual clustering outside, which is the general outward sign with skeps. The signs of the approach of swarming are the crowded state of the hive, and the presence of drones and queen-cells. The first swarm usually issues between ten o'clock in the morning, and four o'clock in the afternoon on a fine day; and although we have known swarms occasionally to leave the hive earlier and later, it is not often that they do so. When bees swarm they will after a short time settle and form a cluster, which will gradually grow in size as the bees join it. As soon as most of the bees have joined the cluster, we generally sprinkle them with cold water, using for this purpose a garden syringe. This cools them, close clustering is the result and very much facilitates after operations. If they have clustered on a bush near the ground, and the hive be one without legs, they can be hived in the following manner:—Spread a sheet, cloth, or even a large newspaper will do, directly under the cluster on the ground, and at one end of it place the floor-board bringing one end of the sheet over the edge of the board.

The object of using the sheet in this way is to prevent the queen and the bees running under the floor-board, which they would be liable to do if the board were stood on the sheet. The prepared hive is then placed on the board and the front raised about 1½ inches by means of a block of wood or a stone placed under the hive. The frames will be placed at right angles to the front of the hive so that the comb-foundation will hang perpendicularly; otherwise, if placed parallel to the entrance, the inclination of the hive will cause the foundation to be displaced, when it becomes warm and consequently soft. The front of the hive should be as near as possible to the cluster. Then give the branch on which the bees have clustered a smart jerk so as to dislodge them and cause them to fall on the sheet in front of the hive. In a few seconds the bees will make a start towards the hive, which some of them will enter, and by their joyful hum will let the others know that they have found a suitable dwelling. Their call will be answered by the others following, and nearly all will enter. Like human beings, some will be late, but after a little time the stragglers on the sheet and those flying about will join the rest. If they are a long time in entering the hive a sprinkling with cold water will make them go faster. When the weather is very hot it is as well to shade them with a leafy bough, or a towel-horse with a sheet spread over it will answer the purpose. If the branch is not a valuable one and is small it will sometimes facilitate matters to cut it off; but be very careful to avoid all jarring. Then shake off all the bees by a sudden jerk in front of the hive. When all the bees are in, give a puff of smoke to drive in the stragglers or those that are fanning; remove the block, and the sheet and carefully lower the hive on to the floor-board. Then carry the hive steadily, place it on the stand it is intended to occupy and adjust it. As we prefer frames at right angles to the entrance, our floor-boards are always arranged to have an inclination towards the front, the hives being set level across the frames.

Those who place their frames parallel to the entrance will have to arrange their hives so that they stand perfectly level. If the bees have clustered on a branch too thick to be cut off or too high to admit of shaking the bees on the ground, they should be first shaken into a skep, box, or pail, and then from this into the hive. Hold the skep bottom upwards in one hand under the cluster, and with the other give the branch a smart shake so as to dislodge the bees into it. They can then be shaken out on to the sheet by inverting the skep and giving it a sudden jerk. Bees do not always settle on a branch, and sometimes choose very awkward places, frequently trying the patience of the bee-keeper to secure them. Sometimes they will settle and spread on the trunk of a tree, and in such a case we must either brush them gently into the skep or place its edge near the upper part of the cluster and persuade the bees to ascend into it; and if a piece of comb containing brood can be placed in the skep it will be more attractive. Occasionally the queen, which accompanies the swarm, will alight on the ground; and when this happens the bees will also settle with her, and spread out for a considerable distance. In this case put the hive as near the bees as possible, and with a spoon carefully place some bees near the entrance.

With hives on legs, and those too heavy to move, we have only to take the bees in a skep, or, what we think still better for this purpose, a pail, and then introduce them into the hive in the following manner:—Turn up the quilt, push back a division-board, and remove three or four of the frames. The bees are then poured out of the pail into this space and covered over with a quilt. They will not be long before they run in and cluster amongst the other frames, when the division-board can be pushed up into its place. Swarms should always be placed on the stands they are intended to occupy, and the hives adjusted as soon as possible after they have clustered, because as soon as they have found a dwelling they at once commence work and mark the spot where they stand. If left until the evening before they are removed to their stand many bees will have already got used to the spot where they were first hived and will be lost. This, however, does not apply to swarms which have to be sent to a distance. These had better be left where hived until the evening, and when all the bees have settled down quietly they may be taken to their destination and at once hived.

In a future article we shall speak of catching swarms and the appliances used for that purpose.

USEFUL HINTS.

Weather.—After a gentle, refreshing rain we have a day (May 18) of brilliant sunshine, and our bees are wild with excitement, several colonies showing signs of swarming, although doubled, and drones flying in abundance. Our supers are not yet on, as we have little fruit bloom from which to gather early surplus honey.

Some of our Kentish brethren, we hear, have sections in position which the bees are rapidly filling, but Kent is a county of orchards and abounds with sainfoin, both producing early first-class honey. We less favoured apiarists must bide our time, and patiently await the hawthorn and white clover bloom, building up our colonies until they overflow with population, and preventing swarming as best we may by nether ventilation, and getting on our surplus cases ready for action when the good time arrives.

Shallow Frames.—Mr. Dobbie, in his letter (1626), p. 240, makes reference to shallow frames 5½ inches deep as advocated by Mr. W. B. Carr and ourselves, and mentions the fact of Mr. Howard having sent out 35,000 shallow frames 6 inches deep, deprecating the establishment of a standard of the former depth. Now in Mr. Cheshire's *Bees and Bee-keeping* (Vol. II. p. 111) the depth of Mr. Howard's 'Small body-boxes,' as used in his 'Holme Wood Hive,' is stated to be 5½ inches, and the small frames used in these boxes are said to have no bottom rail. We do not understand, therefore, this apparent discrepancy of using 6-inch frames in 5½-inch boxes (unless the frames were sent out independently of the boxes), or how Mr. Howard can be said to advocate a shallow frame of 6 inches deep.

Weak Colonies.—'R. M.' (1634, p. 250) suggests that our plan of strengthening a weak stock at the expense of a strong one by changing positions might result in the production of two moderately *weak* stocks. No doubt, such *might* be the case if the exchange were made without thought or foresight. The time of exchange, the *time* of the honey-flow, and the *fecundity* of the queens, must all be taken into account. With a late honey-flow the exchange should be made not later than the end of April; and the weak colony should be *moderately* weak only, while the strong one should be *very* strong. A colony covering two frames only is not worth preserving; and a strong one, having given its flying bees to a weak one, recuperates more quickly at this season perhaps than 'R. M.' supposes, unless he has made the trial. In a former letter 'R. M.' expressed a desire for further information as to the wintering of nuclei. During several winters—notably the last—we have wintered nuclei, both in houses and in the open, successfully and without loss. Each has consisted of three or four frames, well covered with bees, and having sufficient sealed honey for winter store. Our hives contain four frames only—of course, we prefer four to three for wintering—are well made of inch pine, and protected by ample roofs, with quilts, &c., just as our other hives are wintered. Such nuclei, well prepared for winter, with young and prolific queens, will come through the winter better than they would if packed in a ten-frame hive between division-boards. Thus, in fact, we prefer to winter our small 'after-swarms,' and find them most useful when spring arrives for uniting and other purposes.

For strengthening a *deserving* weak colony at the *expense* of a strong one—for that is the only alternative—many advise, and with reason, to take from the strong one a comb of hatching brood, with adhering bees, to jar it slightly, causing the older bees to take wing and return home, while the young remain on the comb, and then to insert the comb and bees in the centre of the weak colony, at the same time uncapping a little honey around the brood-nest, and removing all other combs which the bees are unable to cover, and finally closing up the division-boards and covering up warmly. The process to be repeated as occasion shall require. In lieu of the frame taken from the strong colony, a frame of clean worker-comb, as new as possible, is inserted in its place, and is quickly filled with eggs. But we again say that if a colony does not possess four frames, well covered with bees at the end of April, it is most advantageous to unite it to a moderately strong one.

Giving Room in the brood-chamber is now a matter of importance, if we wish to prevent swarming, with a view to honey-production. During fine and warm weather a frame of nice clean comb may safely be inserted in the centre of the brood-nest, and may often be done with advantage immediately before putting on the section case. Colonies should be occasionally examined in order to ascertain their wants during the latter portion of this month, as the objection to manipulation is less now than in the early spring. By a careful examination in suitable weather, bees now suffer no disadvantage, and where the desire for pilfering has disappeared, manipulation may be carried on during the hours of flight, but care should be taken to keep the hive open for as short a time as possible, since the hatching larvæ are quickly chilled. 'Giving room,' as recommended above, will be understood to apply only to colonies which have not yet attained to the maximum of population. Where such is the case, 'crowding' the bees before putting on surplus cases, is generally advised at this early period, but there are so few districts in which early surplus can be gathered, that there is a wide margin for discretion here. In fact, bee-keepers, perhaps more than any other class, must act in accordance with surrounding circumstances.

Swarming will no doubt have commenced in southern counties before these words are in print, and all apiaries, whether worked for honey or for increase, should be carefully watched during swarming hours—say from 9 a.m. till 3 p.m. Apiaries left to themselves often lose swarms which are never missed by their owner. It must also be borne in mind that some seasons are far more productive of natural swarming than others are.

Showery weather, with frequent gleams of sunshine, and a scarcity of honey, are conducive to swarming. A large skep, or pail, a sheet or cloth, a pail of water, a garden syringe, a short ladder, or steps, are all useful aids towards capturing swarms. When the swarm is well out, and soaring aloft, a few well-directed shots from the syringe will generally prevent its departure to some distant pre-selected rendezvous, and prevent its loss. As a rule all swarms settle, and remain a short time, in the neighbourhood of their hive before decamping. But to this, as to all other rules, there are exceptions, and we have often witnessed the departure of a swarm, especially a second swarm, direct from the parent hive, without the slightest delay or settlement. Such swarms usually rise aloft at once, sufficiently high to clear the tops of the tallest trees, and then dart away in a straight line to the selected spot, at a pace very difficult for any biped to maintain.

To hive a swarm when settled, having first sprinkled it with water from the syringe, take the skep, mouth upwards, in the left hand, having the cloth lying across the left arm, and its edge grasped, together with the skep, by the fingers of the left hand, shake the swarm with a good hearty shake, into the skep and cover it quickly with the cloth. Tighten the cloth around the skep mouth, and at once invert the skep in a well-shaded spot, near the place of settlement, and allow it to remain thus for a couple of minutes.

Next raise the edge by placing under it three thick wedges, by which it is raised a couple or three inches, all round, from the cloth. Shade well with rhubarb-leaves or green boughs, and sprinkle frequently during the day with water, and at night remove the swarm to its future stand, shaking it out in front of the frame-hive which it is intended to occupy, wedging up the front of the hive, and using the carbolised feather to

hasten and direct entrance of the bees. By brushing a little carbolic solution on the branch where the swarm settled, stragglers will be prevented from congregating there. If a swarm settles upon a post, a stump, a wall, or similar place, set an empty skep above it, and by the application of carbolic solution, drive it up into the skep by passing the feather repeatedly around the post, close to and beneath the bees, until all are in. The speed with which the bees will run upwards into the skep will astonish a novice in the art. Be careful, however, to allow no smear of carbolic on the *skep*, or a sudden exodus will follow.

Queen-Introduction to the parent hive, after the departure of a first swarm, is easily accomplished by cutting out all queen-cells and caging the new queen for a short time.

The Pond Method.—Mr. J. E. Pond, writing to the *Canadian Bee Journal* (current vol. p. 68) on this subject, gives concisely the method which he has practised successfully for many years, thus:—'On the afternoon of a fine day, when the bees can fly freely, I remove the old queen, taking care at the time to see that no queen-cells have been started. On the evening of the same day, after the bees have all returned to the hive, I allow the new queen to run in at the entrance of the hive, taking no further precautions. I then allow the hive to remain unexamined for four or five days, except carefully examining the entrance to assure myself that the queen has not been killed and carried out. As yet I have never met with failure, and, so far as I can learn, no failures have resulted with those who have tried the plan by following exactly the method I have briefly outlined. No time is lost in the introduction, which is of considerable importance in the honey-gathering season, or the season preparatory therefor.'

Zinc Excluding Honey-Boards.—In the current number of the *American Bee Journal* (May 2nd), in answer to the query, 538, 'Have you demonstrated in practice that the zinc queen-excluding honey-board is a hindrance to the free passage from the brood-chamber to the supers? In other words, Have you found any difference in the quantity of honey stored where such boards were used?' The answers given were fifteen in number. Of these, ten are highly in favour of the zinc excluder. Of the remaining five, three report that they have not sufficient experience to give a decisive answer; one, Mr. Hambaugh, says that he 'has not experimented largely, but he thinks there was a difference;' and the fifth, Mr. Brown, states that 'the disadvantages overbalance the advantages.' The ten approvers are Professor Cook, Mrs. Harrison, Messrs. Mason, Eugene Secor, Doolittle, Heddon, Taylor, Pond, Demaree, and Newman (the Editor). Mr. Heddon writes:—'I have demonstrated, by the use of several hundreds of them, and for three years, that they are not a hindrance.' Mr. Taylor says:—'I had several colonies with excluding honey-boards that stored more surplus honey than any colony which did not have them.' Mr. Pond states:—'I have satisfied myself that they are a great advantage. I do not find that less stores are secured when zinc excluders are used.' Mr. Demaree says:—'The perforated excluder is a success;' and the Editor remarks:—'The zinc queen-excluders are no hindrance to the bees.' This is important testimony, and we hope some of our leading English bee-keepers will make trial of these honey-boards during the coming season, and report thereon.

ASSOCIATIONS.

BRITISH BEE-KEEPERS' ASSOCIATION.

The usual monthly meeting of the Committee was held on the 17th inst. Present, the Rev. Geo. Raynor (in the chair), the Rev. Dr. Bartrum, the Rev. F. S. Sclater, Rev. R. Errington, H. Jonas, J. M. Hooker, and the secretary. The minutes of the last committee meeting were read and confirmed.

The consideration of amendments in regard to the mode of conducting examination of candidates for third-class certificates was under discussion, and various suggestions in reference thereto were considered. It was resolved, that a special sub-committee, consisting of the Rev. Geo. Raynor, Mr. Hooker, Rev. F. S. Sclater, and Dr. Bartrum, be appointed to consider and report on the proposed amendments, and that the secretary do prepare a tabulated statement of the examinations which have been held under the present rules. The secretary reported that upwards of 250 entries had been made for the bee department of the Royal Agricultural Show, to be held at Nottingham. The several arrangements for this exhibition having been considered, the meeting resolved itself into

The Quarterly Conference.

There were present the following County Representatives, namely, C. H. Haynes, Worcester; W. Rushton, Bedford; J. P. Sambels, Herts; Rev. W. E. Burkitt, Wilts; W. Lees McClure, Lancashire and Cheshire; J. Garratt and F. Cudd, Kent; W. B. Webster, Berkshire; F. H. Meggy, Essex.

The minutes of the last Quarterly Conference were read and confirmed. In reference to the proposed amendments for conducting third-class examinations, the Chairman reported that a special committee had been appointed to consider the question and to report at the next meeting of the General Committee. The suggestions already sent in to the Committee on this subject were calculated to strengthen the present system adopted, more especially in regard to the knowledge of the candidate in reference to foul brood. On this point the Chairman mentioned the fact that recently some candidates competing for the higher honours in the examinations had never met with a case in their lives. They, however, possessed a good general knowledge of apiculture.

Mr. Meggy was of opinion that there were many good experts who were not thoroughly acquainted with the subject of foul brood, and that if candidates were expected to have an intimate knowledge of this subject he feared that many might be found who would fail to satisfy the examiner in this respect, and yet be good sound practical bee-keepers and thoroughly competent to teach others how to manage an apiary. Mr. Sambels supported the views of Mr. Meggy, he thought it would be very hard upon the candidate who showed a good general knowledge of bee-keeping to be plucked in his examination simply because he had never met with a case of foul brood. Providing the candidate showed a knowledge of the subject and how it should be treated, he considered that his certificate should be granted. A discussion ensued in regard to the regulation for catching the queen in these examinations. Mr. Garratt considered that the queen should be pointed out when ascending even if she were not caught. Circumstances might prevent the candidate from actually handling the queen without injury, and if the examiner's attention were called to the fact and noted by him this might be considered sufficient. The meeting was generally of opinion that if the candidate failed either to catch or point out the queen, the examiner should take some trouble to ascertain whether the queen was present and if not to make allowance to the candidate accordingly. The Chairman promised that the suggestions given by the county representatives and others on this subject should have every consideration.

Mr. McClure reported that the subject of the prizes offered at county shows, which were open to members of the British Bee-keepers' Association only, had been considered by the county representatives at their preliminary meeting. The following resolution in reference thereto having been passed—viz., 'That the exhibitors

competing for these prizes should be members of the county Association where the show was held, in addition to being members of the Central Society'—the Secretary read the minutes of the Quarterly Conference held in July last year, from which it was gathered that the regulations made in regard to these prizes were considered and approved by the county representatives.

Mr. Garratt suggested that it would be well to modify these regulations, so as to include the members of all county associations, similar to the rule of the Bee Department of the Royal Agricultural Show. At the time the regulation was made the impression prevailed that at some future time many of the present county Associations distinctions would cease, and that it was very desirable to strengthen the Central Society as much as possible.

Mr. McClure was of opinion that the present arrangement was calculated to draw off the exhibiting members from the County Associations, and he considered that it was very desirable to retain these members in the County Associations, whilst the larger county gentlemen subscribing their guinea annually might be handed over to the Central Society. The Lancashire and Cheshire Association would most certainly work to this end. He hoped next year that the Central Society would increase their grant under this head very considerably and under more suitable regulations. The Chairman pointed out the amount granted for the purpose must depend upon the Central Society's income. If the County Associations would act on the lines laid down by Mr McClure, then the Central body would be in a position to do more for the Counties.

CONVERSAZIONE.

The Rev. G. Raynor, upon being elected chairman, expressed his regret that a county representative had not been chosen to fulfil such duty. However, he accepted the office with pleasure, and hoped there would be an interesting and instructive discussion. There were several appliances and inventions for inspection, but the proceedings would commence with the reading of a paper by Mr. Sambels, entitled, 'The Future of County Associations.'

Mr. Sambels apologised for the hasty way in which his paper had been prepared. He thought the subject would be an interesting one for discussion, but had not decided to commit it to writing until that very day. He then read as follows:—

The subject of the future of our county associations is one that is occupying the minds at the present time of most of us who are interested in them. The question that requires answering seems to be—Have they attained the ends for which they were established? Is their work done? Is there any object to be gained in continuing their existence? They were established, as all are aware, to make for bee-keeping a fit and proper status as a national industry, and to especially benefit the agricultural labourer. These are objects in common with our august parent the *British*, and, of course, the affiliated associations have brought bee-keeping home to the doors of the cottager in a way that the British never could; but my observation of *Hodge* and his susceptibilities to be benefited in the way of what you can teach him towards helping himself leads me to the conclusion that the philanthropic work of our county associations must in the main—I say in the main—be dropped, and if we continue these organizations in the future, it must be chiefly for their commercial importance. Depression is everywhere complained of, but chiefly in the rural districts. The clergy complain, and justly, tithes are low and increasingly difficult to collect; the landowner complains, too, rents are lower even than tithes. Settled incomes are and have been diminishing, consequently everyone is looking around for opportunities of reducing their expenses, and in many cases the subscription to the bee-keeping associations has to go. Moreover, the idea that if you invested in the best hive and a colony of the best bees—which in most cases were the greatest novelty and the race known least about—and set them down in your garden, they not only looked pretty, but a return of 100 per cent per annum was assured, is exploded: as also is the other—that bees are as harmless as flies. The truth is out. Bees have stings, and some people have unhappy ways of handling bees to induce them to show their stinging powers; and I know of few easier ways of losing money than for a slipshod person who is not methodical and who does not pay due regard to details to invest in bees, and persist in trying the newest inventions in spite of repeated failures.

The last three years have seen the loss of most of the above class from our associations as well as a large number of subscribers who supported us in our endeavours to benefit the labourer. This brings me to 'Hodge' again. There are not a few agricultural labourers who are good bee-keepers and are making money by their bees. We have the wife of one in the Association of my adopted county that comes to my mind at once. But these are exceptions. As a rule, they have not the money to invest. If you set them up most of them are too slow to learn to help themselves, and their ideas so centre around the old straw skep with its small returns and simple methods of management that very many of them slip back into the old method, only allowing an advanced man to 'drive' their condemned bees, instead of calling in the old barbarous sulphur-pit. We in Herts did at one time succeed in getting large numbers of such to subscribe 1s. per annum, but they are dropping off; and nothing seems to induce them to continue to subscribe, and so we are even better off, financially, by their withdrawing, however much we desired to retain them. Then, again, the novelty of the thing to the general public is gone. The bee-tent has long ceased to be a source of profit to us. Everybody has seen what can be done by the expert, and has failed to repeat the operations so successfully themselves with their own bees in their own gardens. Shows, again, are a source of deficit to us: they are not of sufficient general interest to draw a crowd, and no, or at least few, horticultural societies care to amalgamate with us, as they will get just as much gate-money without us as with us.

Then you argue that our associations have done their work, and are of no further practical utility? No! On the contrary, I argue they can be made of very great service to bee-keeping in the future; and I would call your attention to the fact that bee-keepers' associations are being largely increased and extended on the other side of the Atlantic, both in Canada and the States. But they will consist almost exclusively of people who make bee-keeping pay, and are more what our Transatlantic cousins call 'Specialists,' and they must in future be conducted on lines more suitable to the altered position of things. In place of the one large organization embracing the whole county with a large central committee with its members living thirty or forty miles apart, we must have something more compact. The county must be divided into districts, and instead of spending a lot of money on the expert's tour and the circulation of the *Journal*, each individual member must subscribe to the *B. B. J.* or *Adviser* privately if he wants it, and the districts must hold frequent conferences. We are nothing if not fraternizing. And what even would the British be to us but for these quarterly conversaziones? Each district must have control of its own funds, a small committee and a secretary, who will find his own smaller area quite as much as he will care to look after, and then a general committee formed from the most enthusiastic members of each district for special purposes, with *perhaps* a paid county secretary, and the organization is complete. From henceforth only the real honey-

getters will care to belong to it, because the meetings will only be of interest or profit to them, except they be lovers of natural history. Then again, we ought to increase our efforts to get bee-keeping recognised as a legitimate branch of agriculture. The Royal and other larger societies may well be copied by many of the county agricultural societies, and as many of them have sub-committees for poultry, butter-making, &c., so they may well add another for bee-keeping. I am sure if this was pressed upon our vice-presidents, who, as a rule, are large subscribers to agricultural societies, they would see the wisdom of the proposal, and bring their influence to bear in this direction to the benefit of both agriculture and apiculture.

I am especially sorry to raise this question now, because I fear those counties that have not been sufficiently worked will use it as an excuse for relaxing their efforts. We want the whole ground covered and worked by the expert and the bee-tent, that will find out the bee-keepers that are really worth their salt, and bring them together for future mutual edification and profit; but without this I fear in some parts the sulphur-pit will still reign. Whatever comes, I believe the British will not suffer. Having fairly established Apiculture throughout the kingdom as a national industry it will ever be her part as parent to guide and control everywhere. To open up new fields, to advance the scientific aspect especially, and when necessary, to claim, protect, and watch over our interest in the legislature and the schools. The counties were always a source of outlay to her, not of profit, and if the affiliated associations were dissolved to-morrow many of their best members would at once join the British, who would thus be swelled by the ablest and best of the county bee-keepers, and would continue to pursue its course of usefulness with even greater dignity and lustre. I have been induced to put these few remarks together since I came to town this morning, in hopes that it may raise a discussion on a subject which has not only been under serious consideration in Hertfordshire, but I find is also being considered by many others in various parts of the country.

The Chairman thanked Mr. Sambels for his able paper, which bore traces of careful thought, although produced hurriedly. Many points therein were of great importance, and well worthy of consideration.

Mr. Garratt thought it was not a little curious that the views expressed in the paper came from the County of Hertford—the first county to form an association, or, at any rate, the first to achieve any prominence under the able and energetic guidance of the late Mr. Peel. As an impromptu effort he considered Mr. Sambels' paper very praiseworthy. He had for some time past endeavoured to form a definite idea as to what the immediate future of County Associations would be. In reading the *B. B. J.*, one could not but discern the notes which had been sounded in different counties, and those were indicative of a diminished interest on the part of not only the officials and managers, but also of the general body of supporters and of the public in general. While that feeling existed it would do much to lessen the efforts and reduce the enthusiasm of those who had the interests of the Association in their keeping. Some counties were in a flourishing condition, but the bulk were not so. Some of the counties which had been foremost in the movement had disappeared from the field entirely, which fact compelled him to admit that Mr. Sambels' paper raised a subject which was ripe for discussion. In his own county of Kent, a periodical meeting of the Committee or Council had been summoned for the purpose of deciding upon the advisability of holding an annual show. No member attended the meeting, nor was a single response to the summons received. Under such circumstances the Secretary and Treasurer could not assume the responsibility of any action in the matter. That state of things was extremely regrettable, nevertheless it was too significant to be ignored. It would be a good arrangement if the district branches could by some means be maintained as units, and be held together in the different counties by some simple tie.

Mr. Webster trusted they were not officiating at the obsequies of bee-keeping in England. He attributed the failure or success of the county Associations to the apathy or energy of the executive officers thereof. Some secretaries made light of obstacles and difficulties, which they always surmounted, and in such cases the counties prospered. He knew of one such secretary who had obtained no less than thirty-two members that year. His own county of Berks had not been exhaustively worked, nevertheless it was fairly successful. The old custom of bee-driving and catching the queen in the bee tent was out of date, and something new must be substituted in order to maintain public interest. The counties should be divided into districts, and small periodical conversazioni held in each locality, when matters of interest relating to apiculture could be discussed and appliances shown and examined.

Mr. Slade dissented entirely from the despondiug opinions expressed by Mr. Sambels. In his own county of Gloucestershire, interest in bee-keeping was kept up by means of district branches, which were all allowed the privilege of home rule, and were therefore satisfied. At Wotton-under-edge the subject was not permitted to languish, for a monthly meeting was held throughout the winter. In Gloucestershire bee-keeping was a profitable investment, as many of the cottagers could testify.

Mr. Meggy said, as secretary to a neighbouring county to that of Mr. Sambels, he was much surprised to hear the doleful account emanating from Herts. He had always looked upon Herts as the pattern county, and had endeavoured to follow its example, especially in the matter of one shilling subscriptions from labourers. He could not endorse Mr. Sambels' views. The fact that the labourers were not willing to reap the advantages they might from the County Associations proved that it was necessary to work among them more persistently and educate them. Neither could he allow that shows and bee-tents were played out. In his own county the bee-tent did not pay financially, but there was no lack of interest in it when manipulations were exhibited free of charge. He thought efforts should more generally be made to hold shows in connexion with the County Agricultural Associations, and he prided himself on managing to obtain a good show in Essex for an expenditure of not more than 2*l.* or 3*l.* On the question of committees, he quite endorsed the remarks of Mr. Garratt as to the difficulty of securing a meeting. No doubt the work mainly depended on one individual; the Secretary should not fail in his duty if the Committee did. If the plan proposed of allowing district branches to carry out their own work in their own way came into force, he could only say that the duties of a County Secretary would be considerably lightened. As regarded Essex, he felt sanguine of continued success.

Mr. Sambels said in reference to the remarks of preceding speakers that the Associations represented by those gentlemen were about three years behind the Herts Association. About three years ago the latter Association was flourishing, new members entering its ranks in great numbers. Then the institution was new and popular, but as time went on there was a difficulty in keeping up the interest. Nevertheless, the Herts Association had worked hard. It was the first to map the county out into districts, and appoint a secretary and local advisers. The latter were instituted at the suggestion of the late Mr. Jenyns. Then, as to the Secretary, it was not possible to find a more energetic one than the Rev. Mr. Seager. That gentleman had actually spent

one summer holiday in his dogcart visiting every bee-keeper in the county. Every parish in which it was possible to give a lecture had been lectured in. Not only had the bee-tent been shown free of charge in all local flower shows, but it had been exhibited on gentlemen's lawns, and the mysteries of the bee-hive explained over and over again to labourers invited there for that purpose. The subject had also been worked through the Natural History Society. He had known cottage bee-keepers, who were full of enthusiasm at first with the bar-frame hive afterwards go back to the straw skep. He did not think the *rôle* of county Associations was played out; nevertheless, he could not help believing that in future these bodies must be worked on different principles. Recent experience in Herts showed that, except in the case of enthusiastic persons, it was difficult to obtain attendances at quarterly conferences held for the purpose of mutual education. In the United States and Canada matters were different. There the Associations did not work from any philanthropic motives—it was entirely a matter of dollars and cents; but they contrived to keep up the interest in bee-keeping by treating the subject entirely from a commercial point of view. They held periodical meetings, and mutually encouraged one another. He did not wish it to be supposed that Hertfordshire would relax its efforts; the executive would always be glad to assist any one in the county to learn apiculture, and do its best to promote the same. They had been considering a scheme of management by which the district branches would be allowed control of their own affairs, and be permitted to appoint one—and in populous districts two—members to act on a Central Committee, which would work for the benefit of the whole county. The local Agricultural Society had not given them unstinted support, and they were determined during the present year to press on that Society the importance of bee-keeping as a recreation and means of livelihood for the agricultural labourer.

Mr. McClure was sorry to hear the unsatisfactory account of Mr. Sambels. In his (the speaker's) own county (Lancashire) not much had been done up to the present. That county was rather too large to be conducted on the same principles as Herts, and he would be glad to hear what plan of action Mr. Sambels would recommend for Lancashire. They had had applications from six districts, which had not even seen a bee-tent. Their local Agricultural Society had asked them to write a paper for insertion in the journal published by that body, and appeared willing to render every assistance.

Mr. Sambels said the district of Herts in which he resided comprised eight or ten parishes. The local secretary lived in the town of Hertford, and his business caused him to travel over a considerable portion of the country once, and sometimes twice, a-week. Knowing all the bee-keepers individually, he seldom passed any by in his journeys without calling on them. Thus he kept himself in touch with them; and besides that he never lost an opportunity of urging clergymen to give facilities for lectures in their parishes during the winter months, and the exhibition of the bee-tent in their grounds during springtime. Many of the lectures he (the speaker) had given, often driving seven, eight, and even ten miles to carry out such work, sometimes journeying through deep snow for the purpose. Quarterly conferences had been regularly held, at which all local bee-keepers were invited to come and bring their appliances, no matter how simple and primitive these might be. At one of the meetings referred to the Canadian gentlemen were good enough to be present, much to the satisfaction of the crowded audience which assembled in the schoolroom at Hertford. He recommended Mr. McClure to adopt some measures of the kind he had indicated.

Mr. Slade said his county had only one tent, and would be glad of more. He argued that bee-keeping was a prosperous undertaking, and, in fact, paid much better than most businesses; therefore he could not understand the doleful view taken by Mr. Sambels.

Mr. Sambels said that Mr. Peel, who was a far-seeing man, shortly before his death, remarked, 'The bee-tent in Herts has had its day; sell it, and use the money for other purposes.'

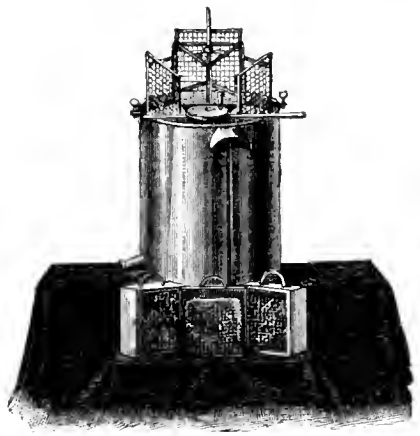
Mr. Meggy said that in Essex they considered it best to send the expert to every bee-keeper twice a-year. He believed that for cottagers it was better to introduce a modern skep than the bar-frame hive. He thought it would be impossible to advance much further with the labourer until bee-keeping was made a subject of education in elementary schools.

Mr. Garratt, while admitting the force of Mr. Sambels' remarks, advocated continuous endeavours to popularise bee-keeping. Nevertheless, the experiences of that evening should teach them that the work could not be carried out exactly on the old lines.

Mr. Sambels said he had entered on the subject with great reluctance, although convinced the difficulties he had alluded to would have to be faced by all of the Associations sooner or later. He trusted that his remarks would tend towards increased and judicious energy rather than desponding apathy.

The Chairman thanked Mr. Sambels for the information he had supplied respecting the management of county Associations. Mr. Webster's remark about individualism they would all endorse, but the difficulty was to find in each county the required individual. He could bear testimony to the energy of Mr. Meggy, who had done a great work in Essex for the County Association. He had let the Agricultural Society have no rest until they supported the movement in favour of bee-keeping. He was glad to see that Mr. Jesse Collings was about to introduce a new bill into Parliament which, if passed, would, from an educational point of view, advance the interests of bee-keeping. He quite agreed with those who thought that the driving of bees in the bee tent and catching the queen was out of date. He thought the frame-hive had not been sufficiently introduced to cottagers. It needed more explanation and demonstration in the methods of handling and manipulating. Interest would not flag among the cottagers if an expert were to visit them twice a-year for that purpose.

Mr. T. Lowth, of Brunt Broughton, Newark, Notts, exhibited his 'Lowth's Unique Extractor.' This extractor



is specially made for the purpose of extracting honey from the comb made in unshapely, unfinished, and unsaleable one-pound sections. The machine will be found handy for extracting honey for exhibition purposes, the honey being easily ejected from delicate comb without a risk of damage in breakage, and with a minimum of waste, the quality and brilliancy of the honey being preserved.

Bee-keepers with small apiaries, who work on the section principle, will find this extractor desirable. The machine is provided with three extra cases for the purpose of holding comb honey to be extracted other than that of sections. The extractor can also be adapted for the reception of two-pound sections. The illustration will furnish an explanation of its mode of working.

The workmanship of Mr. Lowth's extractor was highly applauded, but it was thought that the work it could do could also be effected by the larger extractors.

Mr. Webster showed his new method of fastening whole sheets of foundation into sections. This is done with the aid of a specially made block. Three sides of the section are in halves, so that when folded the fourth side acts as a hinge or joint to a pair of jaws formed by the other three sides, these jaws being opened by the thumb and forefinger of one hand, a sheet of foundation is dropped in with the other, the section is then placed in the block, which keeps it perfectly square, a lever pressed to shut the jaws close together, which fastens the foundation very securely. We think quite secure enough for the purpose wanted, but Mr. Webster pushes two little tin staples into the section. This renders the section a deal more rigid, and the foundation more secure than any means that we have at present seen adopted. This invention was much approved of by those present.

Mr. James Ross, of Stranraer, N. B., exhibited an improved Feeder. This feeder is of wood, and therefore is not so susceptible of changes of the atmosphere as glass or metal. It has no corners into which the bees have no access, and therefore they clean out thoroughly. It can be shut against bees entering without removing it, and it can be easily filled while on the hive.

Mr. W. H. Jenkins exhibited his Reversible Section-crate, for which he claims the following advantages:—That sections can be quickly inverted and reversed. A finished section can be taken out and replaced by an empty one in a few minutes; the state of the sections can be ascertained and the whole crate cleared without taking it off the hive, with no jarring, and with far less disturbance of the bees than with the ordinary section-crate. There is a bee space left at the ends, sides, and between the rows, so that bees can pass to the upper crate without having to walk over the lower sections and soil them. They also offer a safe means for transit, sections being kept clear of the sides of the travelling box by the projecting edges of the holders.

The Rev. G. Raynor exhibited some sections of honey which had been built by the bees without the aid of separators. The sections were particularly fine specimens, being perfectly straight and even.

Mr. McClure moved, and Mr. Hooker seconded, a vote of thanks to the Chairman, who briefly acknowledged the compliment, and the proceedings closed.

EBOR BEE-KEEPERS' ASSOCIATION.

A meeting was held at the Commercial College, York, on Friday, May 11, the Rev. J. Hodgkinson in the chair, when the 'Ebor Bee-keepers' Association' was started. Mr. Samuel Peel was appointed Secretary and Treasurer. A few resolutions were passed relating to subscriptions, and it was also decided to hold a honey fair in the autumn, when it is proposed to offer prizes to the members of the Ebor B.K.A. for honey exhibited in its various forms. Mr. Jemeison has kindly consented to act as travelling expert to the Association.

Correspondence.

'FATHER' LANGSTROTH.

[1642.] Dear Editor, you have given us in last week's *Journal* the long letter in defence of the poor drone, from the pen of the one whom 'all the States own.' Blood *is* thicker than water, and the whole Anglo-Saxon race is one people, moreover 'one touch of Nature makes the whole world kin.' The dear old man has been afflicted, and with the saddest of all sorrows—head trouble. He is so far restored as to be able to write what you gave us last week, but as an actual fact he is past work in the way of bread-winning.

He has been defrauded of the results of his brains by his fellow bee-brethren from lack of power to defend his rights, and being worn out and in poverty they have decided to buy him a small annuity. Surely we can endorse the sublime words of C. Mackay:—

'I love you, if your thoughts are pure;
What signifies your poverty,
If you can struggle and endure?
'Tis not the birds that make the spring—
'Tis not the crown that makes the king.
If you are wise, and good, and just,
You've riches better than all other!
Give me your hand—you shall – you must—
I love you as a brother!'

Let us, as British bee-keepers, give practical expression of brotherly feeling by subscribing to the fund; it will only stimulate his countrymen to do more, and make the annuity the greater. What if the Maloneys, 'Amateur Experts,' and Heddons do occasionally have a 'rough and tumble,' let us show we are one mother's children by giving our mite. Here are two dollars to start, from—AMATEUR EXPERT.

SHALLOW FRAMES.

[1643.] Referring to the letter, No. 1626, in your last issue, I have no desire to engage in any lengthened controversy on shallow frames, and so will content myself with a simple answer to Mr. Dobbie's query as to why I consider a 5½-inch frame better than a 6-inch one—this being the real point at issue.

It is well known by all who have read anything I have written on shallow frames in 6-inch boxes, that I use these boxes and frames for brood-chamber as well as for surplus honey. I have also asserted, very confidently, that any bee-keeper who adopts them as surplus boxes will, under certain circumstances, use them for brood-chambers, as I frequently do myself. In proof of this, and as Mr. J. H. Howard's name has been mentioned, I may say, in passing, that that gentleman is coming to the same conclusion himself, for he wrote me a month ago to say,—'Shallow brood-chambers I have found very good, and methinks I shall prove them ahead.' Here, then, we have the fact that Mr. Howard and myself are as one in adopting shallow frames for brood as well as for surplus.

The boxes in which *my* shallow frames are worked are six inches deep, each holding nine frames; and as two of these are required to form the hive body or brood-chamber, we have eighteen frames in the latter, with a comb-surface of about 265 inches more than that of a ten-frame standard hive. I call this extra 265 inches a fault rather than an advantage; ten standard frames of comb being abundant for all breeding purposes. But if we adopt a 6-inch frame, we get about 500 inches in excess of what is justly considered a full-sized brood-chamber, so the fault is increased in the same ratio. Should the shallow frame be so fortunate as to merit discussion at the hands of the committee of the B. B. K. A., I don't doubt but weighty reasons can be given for preferring the 5½-inch size; indeed, even Mr. Howard's only objection to it lies in the fact that he has made and sold a large number of the 6-inch ones, and so must, perforce, keep to it in the interest of his customers. Curiously enough, Mr. Cheshire, describing the 'Holme-Wood hive of Mr. Howard in *Bees and Bee-keeping*, p. 111, says the frame is 5½ inches in depth.

In conclusion, and since your correspondent has raised

the question, I can assure him that Mr. Howard was not the first maker to offer a shallow frame of standard length to the public. For myself, not being either a maker or dealer, I can only speak as a user of these frames, and I believe I was the first person in the kingdom to use them. I had them in my apiary for some years prior to the Norwich Show in 1886, both as surplus chambers for working over standard frames and as sectional brood-chambers on the Carr-Stewarton plan.—W. Broughton Carr, *Higher Bebington, Cheshire.*

SHALLOW FRAMES.

[1644.] There have been advocates of the 5½-in. frame, and there have been advocates of the 6-in. frame. These both may be very good, but I cannot see one special advantage of the size claimed for either of them, whereas I think you might almost as well have an 8½ as a 6-in. frame. Every one praises his own, of course, so I offer another size which I think best, and can mention positive advantages in its favour. Instead of having the side pieces 8 in., as in the large frames, why not have them 4 in? Advantages:—(1.) For getting super foundation pulled out before the honey-flow, it would cut out for sections without any waste. (2.) Two half-body boxes would make one big one, and could be used for standard frames. (3.) Two shallow frames would fit in each cage of extractor, thus four could be extracted at once where two large ones were before, whereas, with an awkward size of shallow frame, no more could be extracted from at once than of the standard frame, and there would be waste in cutting out for sections. (4.) Of course there would be still less need for wiring foundation in, than in a larger. (5.) This could be put on before the bees were strong enough to bear a larger box. Of course I am too unimportant to cause that my frame should be adopted, but still, why shouldn't I have my say?—F. G. Buzz.

I should like to ask 'X-Tractor' about the plumber's scraper. If one angle is a right angle, what are the others to be? The figure looks as if it is an equilateral triangle.

SPREADING THE BROOD.

[1645.] From several tests made by leaving whole rows of hives through the bee-yard undisturbed, while a row alongside had the brood spread as about to be given, I find those manipulated gave results above the others more than double enough to pay for the extra labour. The trouble with most of those who try the plan for the first time is that they begin to manipulate the brood too early. There can be nothing gained where there are three or four combs, one-fourth full of brood, by spreading them apart and putting an empty comb between; for by so doing we simply spread the brood out in an unnatural position, and work on the plan of scattering the heat instead of concentrating it. Besides, as long as this state of affairs exists, they have already got brood in more comb than they should have; for all will see that, if all this brood were put in one comb, and that comb placed in the centre of a chaff-hive made for only one comb, the bees that hardly covered it before could hardly crowd into the space it now occupies.

To get at what I wish to illustrate, let us suppose that we could get that ordinary colony of bees with its brood in four combs as above, all on one comb, and no room for the bees except in this space, it will be seen that quite a proportion of the bees would be obliged to cluster outside. To obviate this outside clustering we would enlarge our hive so as to take one more comb, which comb is put in. Now having our heat and bees condensed to the right proportion, we would find that the queen would lay in this comb at the same rate she would in July, filling it with eggs in three or four days; while, had we not done this, the brood in the four combs with a whole hive to carry off the radiating heat, would not have advanced to the amount of one-sixth of a frame. In a few days, more young bees from our first frame have hatched to such an extent that they are again crowding out at the entrance, when we once more enlarge the hive and put in another comb (putting it in the centre this time), which is filled as quickly as before, and so we keep on till our hive is enlarged to the breeding capacity of the queen. Does anyone doubt but that we shall have a hive full of brood and bees long before we should if nothing had been done? If such doubt exists, an experiment or two along that line will convince any.

Well, now to practical work. As soon in spring as the first pollen appears, shut the colony on to the number of combs containing brood, using sometimes to confine the heat as much as possible for a division-board. If these combs of brood do not contain honey enough, use a feeder such as I described a few months back for that division-board, and feed, or leave combs of honey beyond the board so the bees can have access to it. Now Now leave them till the two central combs have brood clear down to the bottom outside corners of the frames; for manipulation previous to this would not help a bit, as they already have all the chance for spreading their own brood that is needed. As soon as you find the two central combs thus filled, reverse the brood-nest; by which I mean put these two central combs of brood on the outside, and those outside in the centre, when, in a very few days, we shall have our combs and colony in just the shape of the supposed colony we spoke of above, and are to proceed in the future on the same plan.—G. M. Doolittle, *Borodino, N. Y.* (*Gleanings.*)

COMPENSATION ON EVICTIONS, &c.

[1646.] Will any of your numerous readers kindly give me some idea of the amount (if any) per hive which can legally be claimed for forced removal of bees? I live in a direct line with the Manchester Ship Canal, and have received from the promoters three weeks' notice to quit. As I am a yearly tenant, compensation in the shape of twelve months' rent has been offered me in common with others of my neighbours, but as I have four fine stocks of bees, I think I am right in claiming some compensation for the loss which will ensue if they are removed to a fresh site which I have taken less than a quarter of a mile away. If they were removed to a location, say, five miles distant, there would be the cost of moving back and to; also rent of ground (though small) to pay. Could this be claimed for? I expect to get a few days' grace after the expiration of notice, so any advice from legal or other readers will be in time and thankfully received. No one in our part expected them to begin work here before next spring.

Turning to other matters, I am extremely pleased to see published in the *Journal* a biographical sketch of Mr. George E. Hilton of Michigan, U.S.; but could you not also arrange to give us some sketches and photographs of prominent British bee-keepers—those with whose writings and names we are so familiar and yet many of us have never seen? Take, for instance, 'Amateur Expert.' I have long enjoyed this gentleman's letters, appearing from time to time in the *Journal*, and have often wondered what he is like, whether old or young, and what is his real name, and in what part of the country he lives;* and there are many others as familiar in name whose history as regards bee-keeping would to me be of lasting interest. I have seen very few of the scientific bee-keeping fraternity. I am unable to go to the great shows and places where the great leaders of the craft do

* In the first number of this year's *Journal* we gave an illustration of the apiary of 'Amateur Expert,' with some particulars of his life.—Ed.

congregate, hence my proposal could, if adopted, make up somewhat for such disadvantage. I am exceedingly fond of my bees and all connected with them, and live outside the town away from my work at a sacrifice purposely that I may indulge my fancy. The bees are a great comfort to me, and have taught me many of the useful lessons mentioned by Mr. J. Eaton Fearn in his letter in last *Journal*.—F. Pearson, *Stockton Heath*.

NON-ALCOHOLIC DRINK.

[1647.] Will you kindly allow me to ask, through your columns, if any of your readers will favour me with directions to prevent a drink made with honey from fermenting? I have been looking through a number of back years of the *British Bee Journal* and find several recipes for mead, &c., but as they all 'work' or 'ferment,' or have yeast introduced, none of them will suit us, as we are thorough abstainers, and want to get a good *non*-alcoholic drink. As the summer is coming on, no doubt many would be glad to know how to make a light beverage from their honey.—The Wife of a Sussex Bee-keeper, *Ticehurst, May 15th*.

[We should be specially obliged by some bee-keeper replying to the above.—Ed.]

TEN TONS OF HONEY.

[1648.] I have received numerous letters since the above advertisement appeared, and I have found it entirely impossible to reply to one half of the inquiries as to price, &c. Allow me to thank all those who have written on the matter, and to say that during the season I shall be very pleased to quote for new season's honey as per advertisement; also sections.—J. D. McNally.

Echoes from the Hives.

North Leicestershire, May 21st.—From the 4th to 21st inst. inclusive, the bees have been hard at work without a day's interruption. Some little rain fell on the 17th, but the weather was so warm that the bees continued work through all but the heaviest showers. On Friday, 18th inst., the thermometer went up to 68° Fahr., and a copious honey-flow set in, and still continues. Saturday, the 19th inst., was a wonderful day for bees. The thermometer stood at 75°, and the busy workers were carrying in pollen, nectar, and water for fifteen hours. Stocks are rapidly increasing in strength; some few are abnormally strong, and nearly all are crying out lustily for more room. Supplies of pollen and nectar are just now being drawn from wild cherry, plum, sloe, sycamore, currant, gooseberry, arabis, dandelion, chickweed, shepherd's purse, gillyflower, ribes, and celandine.—E. B.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Th' Aspen.—The queen forwarded was unfertilised.

G. Beestone.—*Wax-moth.*—The larvæ forwarded were those of the wax-moth. They should be destroyed whenever seen by crushing them or extruding them by aid of a pen-knife. They may be avoided by keeping stocks strong, or having Ligurian bees.

P. T. C. Box.—*Fumigator.*—We believe this can be purchased of most dealers. Please consult our advertisement columns, as we do not recommend one dealer in preference to another.

J. P. O'Flaherty.—1. *Swarming.*—We cannot recommend the plans you suggest, but consider that under the circumstances it would be best to make an artificial swarm in the manner pointed out in *Modern Bee-keeping*. If the swarm is put in a frame-hive and placed on the old stand, the super should be placed on it. In this case it would be better to use starters only. 2. *Fanning.*—Fanning is to reduce the temperature of the hive, and evidently there are signs that your bees will swarm before long. 3. *Painting Hives.*—The whole hive should be painted.

R. Auld.—1. *Full Sheets of Foundation.*—It is advisable to use full sheets of foundation if properly secured in the frames, care being taken that they hang perpendicularly and that there are sufficient bees fully to cover both sides of all frames. Starters may be used at all times, but if the honey flow is at hand and large, drone-comb will most probably be built. 2. *Old Combs having Honey.*—Old combs with honey in them may be utilised for swarms, the cells in which there is honey being first uncapped.

Enquirer.—If your candy is wholesome and sweet it may safely be re-liquefied.

C. Gilbert.—*Moving Bees.*—We would recommend you to allow your hives to swarm, and get the swarms forwarded in swarm-boxes, and sell the stocks on the spot. Frame-hives will travel well on the railway if there is some person to see to the hives being so placed in the train that the combs hang in the direction the train is going, and not across the carriage, or the combs may probably be dislodged from frames by a sudden jerk or stoppage.

R. J. Sankey.—*Bees Dying.*—The queen is at fault, being constitutionally weak. Introduce a new queen and the mortality will cease.

H. Bishop.—*Joining Association.*—Apply to Mr. J. Huckle, Kings Langley, Herts, who is Secretary of the British Bee-keepers' Association.

J. F.—*Doubling Hive.*—The upper portion ought to be the exact size of the lower and interchangeable with it, viz., $17 \times 15\frac{1}{2} \times 8\frac{1}{2}$ inches, inside measurement. This size allows of a lateral movement of frames, which is important.

Beauly.—1. *Arrangement of Bar-frame Hive.*—Your surmises are correct as to arrangement of boards. We very much object to the narrow entrances in such hives; the entrance should be the whole width, with arrangements for contracting, on the outside, when robbing is rife. 2. *Uniting Cast.*—You would keep the youngest queen, which would be with the cast. If two colonies of bees are separated from their hives, combs, and brood, and are while in this condition thrown together, they will unite peacefully.

G. Field.—*Hybrids.*—The bees sent are Ligurian and English hybrids. When the bees hung out last season they were superseding their queen, and the dead queen found was the old one; the virgin queen left was fertilised by either a Ligurian or a Ligurian-English hybrid, hence the bees now are imperfectly marked. When an English stock is hybridized a portion only of the population have yellow bands, and many have the three yellow bands; but where an English stock is crossed by a hybrid, a greater scarcity of bees with the distinguishing marks of Ligurians are noticed, and so on as each successive cross increases or diminishes these marks.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Appleton, H. M., 256A Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Burtt, E. J., Stroud Road, Gloucester.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.

HUTCHINOS, A. F., St. Mary Cray, Kent.
MEADHAM, M., Huntington, Hereford.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.
WALTON, E. C., 82 Emmanuel Street, Preston.
WEBSTER, W. B., Binfield, Berks.
WOODLEY, A. D., 26 Donnington Road, Reading.
WREN & SON, 139 High Street, Lowestoft.

HONEY MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
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BALDWIN, S. J., Bromley, Kent.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BRITISH HONEY Co., Limited, 17 King William St., Strand.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BENTON, F., Laibach, Carniola, Austria.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
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SIMMINS, S., Rottingdean, near Brighton.

METAL ENDS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
EDEY & SONS, St. Neots
GODMAN, A., St. Albans.
MEADOWS, W. P., Syston, Leicester.
NBEIGHOUR & SONS, 149 Regent St. & 127 High Holborn.

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EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.

COMB FOUNDATION MILLS.

GODMAN, A., St. Albans.

HONEY GLASS MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BLOW, T. B., Welwyn, Herts.
PEARSON, F., Stockton Heath, Warrington.

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ABBOTT, BROS., Southall, London, and Dublin.
ANDREU, F. C., Port Mahon, Minorca.
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HOLLANDS, W., Waddon Road, Croydon.
HOLE, J. R. W., Tarrington, Ledbury, Herefordshire.
McNALLY, R., Glenluce, N.B.
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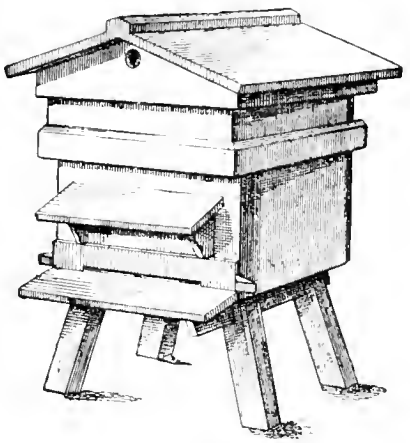

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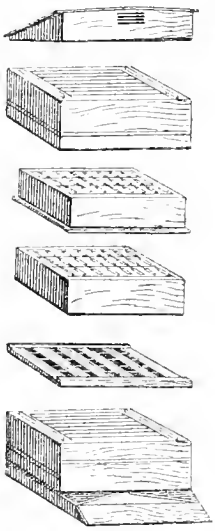

Fig. 7A, with Reversing Arrangement and Honey Board.

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THE BRITISH BEE JOURNAL

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Editorial, Notices, &c.

LANGSTROTH FUND.

Donations sent to us, or to Mr. Huckle, Kings Langley, Herts, on behalf of the above Fund, will be thankfully acknowledged in the *B.B.J.*, and forwarded to America. The following is the list of contributions received up to date of present issue:—

	£	s.	d.
T. W. Cowan	5	0	0
Abbott Brothers	3	3	0
Geo. Neighbour and Sons	2	10	0
Rev. Geo. Raynor	1	1	0
W. Raitt	1	0	0
W. Broughton Carr	1	0	0
H. Howard	0	10	6
'X-Tractor'	0	10	0
'Amateur Expert'	0	10	0
Geo. Henderson	0	10	0
John Hall, Wigton	0	5	0
W. M. Graham, Lowfield Apiary	0	5	0

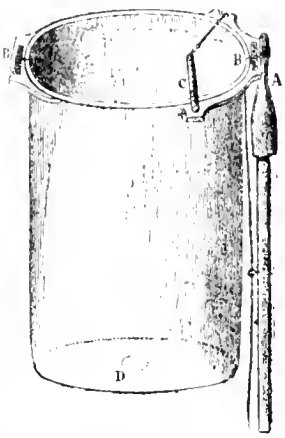
PRACTICAL WORK IN THE APIARY.

CATCHING SWARMS.

If swarms were always to settle near the ground, or within easy reach of the bee-keeper, hiving them would be easy enough, but sometimes they select places on trees too high to reach in the ordinary way, or even conveniently with a ladder. When hives are kept in lofts or in places above the level of the ground, swarms usually settle on high trees. We at one time kept nearly 40 hives in lofts above our stables, and during the whole time they were there every swarm settled high and out of reach, and we had not one that we could hive without a ladder or some special contrivance for the purpose.

We have sometimes been able to get a swarm away together with the branch of the tree on which it alighted if this was not too large. The branch is cut off without jarring by means of an instrument called a 'sécateur,' and which we use for tree-pruning. This instrument is found in every gardener's hands on the Continent, and is gradually coming into use in this country. A branch, ¾ or even 1 inch in thickness, can be easily cut through without the slightest jarring, therefore it is very much better for the purpose of getting a swarm than a pruning-knife. When the branch is much thicker and assistance can be had, a pruning saw could be used. The assistant mounts a ladder, and with the 'sécateur' prunes away the small twigs surrounding the cluster. Then he takes hold of the branch while the bee-keeper from below saws carefully through it with a pruning saw. A pruning saw is generally made to fix to a long handle, and has the teeth set in such a way that they cut through green wood rapidly and without clogging up, as an ordinary saw would do. Our pruning saw has a long handle of four joints which screw together so that the length can be adjusted to the height of the branch from the operator.

An assistant is not always at hand, and to enable bee-keepers to take their own swarms with little trouble a number of contrivances have been introduced. The oldest, and one we have used for upwards of twenty years, and the pattern generally used on the Continent, is shown in the illustration. It consists of a jointed hoop fixed to a ferrule A, which fits on to the end of a pole. The hoop is hinged at B, B, one half of it is rigid and attached to A, while the other half C is connected to a cord which passes through a hole on the fixed portion of a hoop, and through eyes along the pole. To the hoop is fixed a bag, something like a butterfly net, only made of calico. Ours is made of glazed calico, with the glazed surface inside. The bottom is not sewed up, but it is tied round a couple of inches from the end by means of a piece of tape. We preferred this arrangement because we found it much easier to hive the swarm than when the bag has to be turned inside out. The glazed surface also dislodges the bees much more easily. The way of using this appliance is very simple. Bring it up to the swarm, holding the pole in one hand, and with the other gently pull the cord. This will draw the two halves of the hoop together and enclose the swarm in the bag. Lower it gently, and remove the bag from the pole by pulling off the socket A. Bring it to the hive you wish to introduce the swarm into, and untie the tape at the bottom of the bag. One smart jerk will dislodge all the bees, as the sides of the bag are parallel and the opening at the bottom the full width of the bag.



A very simple contrivance, which we saw when visiting Mr. Root, Medina, and which is described by him in his *A B C of Bee Culture*, is the invention of Mr. Shephard. It is simply a box made of ½-inch basswood boards, 8 inches square by 16 inches deep, the bottom closed and top open. The sides are bored full of ¾-inch holes. The

box is then fixed to a pole which passes through two of the sides; and fastened in this way it can be turned in any direction and brought in position to receive the swarm. Another pole with a hook is sometimes useful to shake the bees from the branch into the box. A so-called improvement has been advocated by Cheshire, more theoretical than practical, in which he proposes to have a thin iron rod pass 'loosely through the box above the centre of gravity so that the latter always rights itself whatever may be the position of the pole;' but the fact seems to have escaped notice that the centre of gravity of a shifting cluster of bees is moveable, and such an apparatus would be very likely to precipitate the bees on to the operator's head when he least expected it. It is also a much more expensive contrivance, and more likely to get out of order, than the Shephard apparatus, whose extreme simplicity is its recommendation. The rigidity of the box constitutes its safety.

When visiting Mr. McKnight, at Owen Sound in Canada, he showed us a very simple and ingenious device he used for taking swarms from trees. This consists of a stick, the end of which for about 18 inches is planed, six-sided pieces of lath are cut in lengths varying from 6 to 10 inches, and are nailed at right angles to the stick on the six sides. Close against the stick these laths touch each other, but from the fact of there being six sides to which the laths are nailed, the ends are from 3 to 4 inches from one another. About a foot of the end of the stick is furnished with these laths, and at the other end there is a ferrule, by means of which the stick can be fixed to a pole. When the cluster has partly settled the bristly end of this pole is pushed in among the bees, which cluster on and between the laths and can be brought down and shaken off. In this way Mr. McKnight told us he had never failed to secure a swarm.

Mr. J. B. Hall, of Woodstock, uses a contrivance made of a cheese-box fastened to a pole. A piece of cheese-cloth is fixed to one side of the box, and by means of a cord is drawn over the opening of the cheese-box, and in this way the swarm is secured. Mr. Pettit uses a box in which a couple of frames of comb can be placed. This, held up to the cluster, induces the bees to run in amongst the combs. There are many other ways of securing swarms that have settled high besides these, but they are all based on the same principle. Sometimes it will be noticed that bees are not inclined to settle at all, but will rise higher and higher into the air. When this happens the bee-keeper should arrest their movements by throwing water from a syringe over them in such a manner as to resemble rain. Some use sand or earth, but we have found water much more effectual for this purpose.

EQUALISING STOCKS.

The spring is the best of all times for getting bees to mix freely, because most, if not all, of them are comparatively young; consequently, they fraternise more freely than in the autumn. But if you wish to make a comparatively weak stock strong at the expense of the stronger, the chief requisite for success is *brains*.

To exchange places on a bright day, thus giving the weak stock the foragers that did belong to the strong, is a simple method, but the queen of the weak stock must be first caged, or she will probably be ruined by 'balling' for some hours; and I am disposed to think that 'balling' does more harm to full-laying queens than most of us are disposed to think. To find and cage one or two queens when hives are full of bees and brood is an operation likely to take some time in the hands of people who are likely to profit by any good advice I may be able to give in this article, and the experienced will not require any from my pen—they always have means and 'short cuts' of doing things ready to hand. Then again, the queen or queens have to be liberated, which means another overhauling, and over-manipulation is the bane of unsuccessful bee-keepers; consequently, I do not suppose this method is likely to be popular, but it is workable in some hands.

Another method is, if the weak stock has a comb in which the queen has not laid, and there are sufficient bees to cover it, take a comb of brood from a very strong stock and give it to the weak one in place of the comb that has no brood in it, giving the strong stock the empty comb—making an exchange, in fact, if the empty comb is clean; if not, give a clean comb or a sheet of foundation—thus keeping the strong stock at work and its queen egg-laying. In making the exchange, do not give a comb containing eggs only, let the brood be sealed if possible; at all events, let it be above five days old, past the 'weaning' stage, as young brood is always a greater strain on the colony to prepare food for it than the older.

Another plan still is, to smoke and gorge a weak and strong stock, or, perhaps, two strong stocks if necessary, and taking a comb with its adhering bees from the strong stock, carrying it out well in front of the hive, and gently jarring it on the top bar with one hand, while you hold it firmly with the other. This operation will cause all the old foraging bees to leave the comb by taking wing and flying home. The bees remaining adhering to the comb will thus be young; and if you cannot spare comb and all, they may be shaken off the comb on to the top of the frames in the weak stock or outside the dummy, if your dummy has a bee-space underneath it, as all mine have. By the way, let your dummies fit well at the ends, but always have a bee-space underneath them. Some recommend shaking the young bees in front of the entrance on to a board, and allowing them to run in. You may do so, but young bees, especially the very babies, are intensely silly and will run all ways but the right, and, moreover, can ill bear being chilled.

If one stock cannot spare enough young bees, some may be taken from a second and added in precisely the same way; and I know of no readier method of building up than this, as some of the bees thus given soon become foragers, thus bringing in a greater amount of food, and the very young become nurses, and thus the weak colony is strengthened on all hands.

If you have two weak ones, of course the simplest method is to unite them, reserving the best queen, or if both queens are good, disposing of one of them. Queens are always marketable, especially in spring.

A few words of caution as what *not* to do are generally far more important than what to do. First, a really good strong stock at the commencement of the honey-flow is worth three moderate ones. Next, equalising is of no practical value when the honey-flow has begun. Again, if you have a stock very strong some time before the flowers are ready, to give some of the bees and brood to a weak one is the very best thing you can do, because it is more than probable if you do not divide them they will swarm. And if they swarm they are not so likely to give large results. Once more, do not attempt to give native bees to foreigners, except Carniolans. In the old days, when I was enraptured with the Syrians, I knew a mere handful to kill and carry out all the black bees on six frames that were given them in one night—the savages! Once more, it is a simple but wise precaution to feed stocks over night with a little scented syrup if you are going to unite or add to them, thus making both lots *taste* alike. Above all, what you have to do do quickly, firmly, and resolutely. Avoid over-manipulation; it is a long double word, but four letters spell it for bee-keepers, it is R-U-I-N.—AMATEUR EXPERT.

Selected Query.

[11.] *Do you advise the use of separators? Are wood or tin best? What is the proper width when they are to be used with 4¼ in. sections to prevent the comb being built, so as to project beyond them at top or bottom?*

Yes, if you wish to glaze or handle the sections without damaging the honey-comb. I prefer tin to anything, but it should be a good thickness. 'Taggin tin,' used by some makers of slotted dividers, bends, and is much too thin for the purpose. The width or depth should be 3½ in. in the narrowest part.—JOHN M. HOOKER.

No. Separators should be 3⅞ in. deep.—SAM. SIMMINS.

1. Yes, particularly on sections over 1¾ in. wide. 2. Wood. 3. Cut the separator to the size of section, and take the bee-space out of top and bottom nearly half inch deep, or all round for four bee-way. Latter are preferably cut from tough English wood to prevent splitting.—JOHN EDEY.

No, but I admit real practical knowledge and confidence are necessary; without therefore, beginners, and old hands who will not admit by advanced practice the better way, must use separators, which should be of wood only. Separators should never be more than 3⅝ in. nor less than 3½ in. wide, and kept at equidistance from the top and bottom of a 4¼ in. section.—JOHN H. HOWARD, *Holme, Peterborough.*

1. Yes, most certainly, if marketable sections are required. 2. I have used wood separators, but have discarded them as they were so easily split and damaged. I use zinc dividers only; some with slots and some plain. 3. As the openings in sections vary very much from half to a full bee-way, there should not be more than quarter inch top and bottom. The bulk of my dividers in use are 3⅜ in. wide. Some I cut years ago are not quite so wide, and I have occasionally had a few projecting cells. I mark the divider, and if it occurs again it is thrown out.—W. WOODLEY.

1. For 2-in. sections, yes; for narrow sections, not so necessary. 2. Taking all things into consideration, I prefer tin. 3. 3½ in.—ROLAND GREEN.

I advise the use of separators for either wide or narrow sections. Tin is better than wood, and zinc is better than either, as it is not so liable to rust. The proper width of separator to fit 4¼ in. sections is, full depth, 4¼ in., at corners; at centre, 3⅝ in.; that is, $\frac{5}{16}$ in. taken out of top and bottom edges of separator.—WILLIAM MCNALLY, *Glenluce, Scotland.*

Yes, certainly. I find tin the best for many reasons. I use the 3⅝ in. wide, and find this width succeeds. The distance allowed at top and bottom coming opposite the piece cut out in the section, gives the bees ample room to pass.—WM. N. GRIFFIN.

Yes, decidedly. I prefer tin to wood when honey is coming in and stocks are strong. I never find any difficulty with getting bees into supers. About 3½ in. wide, placed equidistant from top and bottom.—JOHN WALTON, *Honey Cott, Weston, Leamington.*

1. Yes; I always use separators, and consider wood the best, being the warmest. 2. 3½ in. wide, placed so as to give a ⅜ in. passage top and bottom on face of section.—H. WOOD.

Yes. Metal separators (No. 5 zinc) are the best and cheapest, especially with four bee-way sections, in which case they must be slotted. Four inches from bottom of foot to top, or 3¾ in. if without feet.—W. B. WEBSTER.

Decidedly. Tin of course are more durable, but I think the bees prefer wood, and they are certainly warmer, so, on the whole, I prefer them if, like Abbott's, *thin enough.* Thicker ones are an abomination. To secure an even face to the combs, only ¼ in. should be allowed top and bottom, *i.e.* the separators should be 3¾ in. wide.—W. E. BURKITT.

Yes, and I prefer tin to wood, as being more durable, not liable to warp, and better adapted for cutting slots, but the tin should be light and thin. With 'four-way' sections I use dividers of 3⅞ in. wide, which allow a space of $\frac{3}{16}$ in. at top and the same at the bottom of the sections. This allows passage for the bees and prevents bulging of combs.—GEORGE RAYNOR.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

'RAYNOR EXCLUDING-HONEY-BOARDS.'

[1649.] As the slatted-honey-boards, for excluding queen and drones from surplus boxes, now in general use in America, are likely to gain an introduction into the apiaries of this country also, I should be glad to say a few words respecting the one I use. As the time for their use has arrived, and unavoidable circumstances have prevented an earlier reference, I would say that without an engraving it is difficult to give a full description, but they are very similar to the American boards, and are made by Mr. Neighbour of 149 Regent Street, and by Mr. Dines of Maldon, Essex, either of whom will supply a pattern with full particulars and price. The board is made to cover a ten-frame standard hive, outside dimensions 17 × 16. It consists of a framework containing eight slats and nine interspaces corresponding in width and direction with the top-bars of the brood frames and the interspaces between them. The latter are fitted with queen and drone-excluding zinc slides, having two rows of perforations of a new pattern, which allow perfectly free passage to worker bees, but effectually exclude queens and drones. This new 'zinc-excluder' is manufactured and supplied by Messrs. Harvey & Co. of the Kent Zinc Works, Lewisham, S.E., and has been registered by them under the name of 'Raynor's Queen and Drone Excluding Zinc.' The under side of the honey-board has a full bee-space of three-eighths of an inch, being intended for use on hives whose frame-bars are flush with the sides of the hives, and the slats on the upper side are flush with the outside framework of the honey-board, to which it is intended that all section-cases or crates in use at present having a bee-space below their framework may be adapted, as it is considered that a bee-space both above and below the honey-board should be afforded for the freer passage of the bees. I may add that I obtained sections last season worked on these honey-boards better in quality, brightness, and colour, than any I had previously obtained without the use of queen-excluding honey-boards, and the bees manifested no indisposition whatever to pass freely through the perforations, nor had I a single swarm from hives on which the boards were used.—GEORGE RAYNOR, *Hazeleigh Rectory, May 26th.*

BEES AND FLOWERS.

[1650.] Possibly many of your readers are expecting to see a few lines from me once again, having promised last autumn that it should be so. By your permission I will first say a few words about the bees. I closed up for the past winter with seven old stocks, seven swarms, and three lots of driven bees. Thirteen lots weathered the winter well and came out this spring nice and strong. Three lots were rather weak, and one lot starved to death with plenty of stores in their hive. Well, say you, that is strange talk, but permit me to relate the circumstances. Most of my hives hold fourteen standard frames, and this lot was packed for the winter on seven frames, and having some frames of comb which had lately had the honey extracted from them. My dummies don't reach the bottom of the hive by $\frac{3}{8}$ of an inch, and behind this I left four of these empty combs for the bees to clean, and by some means the queen got in with these empty combs and the weather set in cold, so I did not disturb them, not thinking, of course, that the queen had got out of place; but I suppose the fact of her being behind the dummy all the bees followed her, and there they stayed and starved to death with abundance of stores on the other side of the dummy.

Now I had three queens which were in their third year and I decided to unite these three weak lots and so utilise the two spare queens, they being young and healthy. And I will here relate that I decided to follow some of Mr. T. Bonner Chambers' advice, which he gave us in *B. B. Journal* for April, 1888, pages 180 to 183. The advice which I followed is that which he calls an excellent method, on page 181, for 'queen introduction.' Now two of these weak lots were in one hive with a close-fitting dummy (only) between them, with a piece of board to divide the entrance on the flight-board; I had previously brought the single weak lot up to the double one. I did not take quite so much pains as our friend 'T. B. C.' advised, but I will tell you just what I did. I got two ordinary lucifer-boxes and put one in each waistcoat pocket, opened all three lots of bees and spread a carbolic cloth on the tops of frames for about one minute, then lifted frames one at a time until I had caught two of the queens and slipped one in each lucifer-box and back into, this time, my trousers pocket to keep them warm. I then took one frame from No. 1 hive and shook the bees on the platform in front and replaced it at one end of the hive which had the two lots in; I then took a comb from No. 2 hive and No. 3 hive and treated them all in a like manner, one by one, until I had been through all three lots, and then covered the frames with a quilt and left the bees to run in while I went with my two queens to two other stocks, first arranging the platform and then taking the combs one by one, and caught the old queen and gave her a pinch with the thumb and finger and threw her down (of course dead). Then I began in like manner to shake the bees from the combs and replacing them in the hives: so here you see, that I did not at any time have more than one comb out of the hives at one time. I did not take any notice of the loose bees which were on the sides and bottom of the hives when I had been through all the combs, and of course as fast as I could handle them I dropped the queen on the heap of bees from the lucifer-box and they all ran in.

The next day one would not think the hives had been disturbed unless they were acquainted with the fact. I have changed many queens for myself and neighbours in this same way, and all have gone to work as though nothing had interfered with them in the slightest way. But here I will mention, if there is much fresh and thin honey in the combs, I should not introduce queens in this way, as a deal of the honey would be shaken out of the combs, and, of course, nearly drown, and perhaps quite drown, many bees. I myself used a cage in introducing one in a hive on the 12th of May, this hive having much thin honey in it. In this case I let the queen remain in the cage twenty-four hours. I use a long cage to go down between the combs. This is put directly under feed-hole, so you can release the queen without even disturbing quilts, and you can take the cage out when it suits you, or, say, after the queen has had twenty-four hours' liberty. I never remember losing a queen, either with or without the cage, so I think either of the above is a good plan, and perhaps many others are as good, but I have not tried them, so must leave it to those who have. I may say that Mr. R. Green, the Kent Bee-keepers' Association expert, called on me on the 14th of May, and found this cage in the hive. He wanted to know why I used a cage. He was satisfied with my explanation, but he says he has long practised, and recommends the shaking bees from combs in the front of the hive, then dropping queen, as above, and it is the safest plan he knows of.

I am afraid I am trespassing too far on your space, but if you can spare me I should like to say a few words upon bee-flowers. I told you before that many of our friends have sent me different kinds of seeds, cuttings, and plants; I beg to return thanks to all. I have done my best with them, but upon my soil I find nothing to equal the borage and Nepeta Mussini, therefore they are still my favourites. I had many applications for the latter last autumn which I could not supply, I therefore promised to strike large quantities this spring and offer them to our bee-keeping friends. Now I have done so, and I think I have supplied all my last year's orders, so I have advertised in the advertisement column of this issue a fresh batch. Cuttings and seed will be free as before, namely, applicants paying postage.—C. H. W., *Aylesford, near Maidstone, Kent.*

JOTTINGS BY WOODLEIGH.

[1651.] There has been a great deal written during the past year or two on improving our race of bees, and I think it is quite time some one should say a few words in favour of the drone bee. Writers on bee matters are generally in favour of using full sheets of foundation in the brood nest, or at least of leaving a space in some outside corner of the comb for the bees to build if they like a patch of drone-comb; and if they do not think fit to build their drone-comb at that particular spot, they will in the near future be under the necessity of raising drones in elongated worker-cells. Looking at the fact from a physiological point of view, could there ever be a more fallacious proceeding on the part of prescient man who prides himself on improving his race of bees. Recent writers have compared stock-raising, &c., to bee-culture, yet what stock-raisers would ever think of introducing foreign blood into their strain as a means of improving the breed, and neglect the first and greatest desideratum, viz., a sire of the noblest and amplest proportions? Yet the tendency of modern bee-culture is to prevent drone-brood raising in the natural way, *i.e.*, in natural built cells; and consequently if drone bees are raised by a colony in elongated worker-cells, they must of necessity be smaller than if raised in a larger natural size drone-cell. In the first place, the nurse bees would not have room for the insertion of so large a quantity of food as in the natural cell; then the bee itself could not grow and thrive so well as in the natural cell by reason of its restricted dimensions, the cocoon from which it emerges being small, how can the baby bee grow to a normal size, where if we are advancing it ought to be a little larger rather than smaller than the drone of twenty years ago? I commend this little jot to the thoughts of bee-keepers, and the query rises to my mind, Are we really advancing in excluding natural drone-combs from the modern bar-frame hive? I fear our greed for gain by raising worker bees only is in an opposite direction as

regards the improvement of the race of bees. Then by every means let us look to the improvement of the drone bees as the first stepping-stone to an improved race, for unless the sire is in good form and condition, the progeny must deteriorate.

We have had a beautiful rain in our district during the week, and on Friday, May 18th, our first honey flow for the season. Every colony was in a state of excitement, as though they had discovered some deserted hives replete with stores. They continued to work with a will until very late in the evening, in fact, till darkness prevented them. In the evening I started in quest of their newly-discovered Eldorado, to discover, if possible, the source from which they were busy extracting their sweets, and a walk of about a quarter of a mile from the apiary I found some large sycamore-trees literally covered with flowers and bees at 7.15 p.m., also some beech-trees had a great abundance of blossom and attracted a considerable number of bees even at that late hour of the day, though not so many as were on the sycamore-trees. There are large fields of permanent grass yellow with the dandelion in our immediate vicinity, and this Saturday morning I walked across one of the fields and found large numbers of bees sipping honey from the flowers. I was tempted very much to super some of my strongest colonies, but to-night it is much colder, and so I shall leave the supering until late in next week after the holidays (weather permitting); the earliest date I have put on supers has been May 23, and in an early season. I would caution young hands in bee-keeping not to super too early, also to well wrap up their crates whenever they do super to conserve the heat of the hive and keep up the normal temperature of brood-nest. Saw first drone this season on May 9th.

RECORDS OF QUEENS AND SUPERSEDING THEM.

[1652.] In the *American Bee Journal* just to hand there is the following query (540):—'*Is it best to keep a record of the queens so as to supersede them when they are two or three years old, or let the bees manage in their own way?*' Some prominence was given to this subject in your article of June 17th, 1886, when you say:—'*When queens are stimulated to their utmost, and as much as possible is got out of them, they are of little use after the second year.*' The following week (399) I took exception to this, and pointed out that many prominent apiarists preferred leaving the superseding to bees themselves. I say that 'my experience tells me that there are many things that bees do much better than we can, and I think this superseding of worn-out queens is one that, if left to themselves, they will do at the right time. If a queen during her second year has been as prolific as we could expect her to be, and has shown no signs of want of vigour, it appears to be a cruel as well as an unwise thing to depose her to put a young and untried, artificially bred queen, in her place,' and run the risk of introducing foul brood into your apiary with the queen, which, if bought or imported, may possibly be as old, or older than the one superseded, for all we know.

The following are the answers reported in the *A. B. J.* from men whose names will be familiar to many, particularly to you, Mr. Editor:—

It is best to keep a record.—J. P. H. Brown.

Let the bees do it.—Dadant & Son.

let the bees take care of that matter.—G. M. Doolittle.

Perhaps so, but I never have superseded my old queens.—Eugene Secor.

Keep a record of everything, and supersede the queen when she ceases to be prolific.—A. B. Mason.

I have never kept a *perfect* record, but I am inclined to think that is the best way.—Mrs. L. Harrison.

Keep a record anyway; but I do not know what is best as to the superseding.—C. C. Miller.

It is much better to keep a record. Supersede the queens when they begin to fail—it makes no difference if they are one or three years old.—P. L. Viallon.

I let the bees manage it in their own way with all valuable queens.—G. L. Tinker.

Deeds, not days, determine a queen's usefulness. With experience you can tell when a queen becomes unprofitable by looking into her hive, and I should assist the bees as much as possible to supersede worthless queens.—R. L. Taylor.

I prefer to keep a record of all queens, including pedigree, so far as ascertainable. But I let the bees supersede a good queen. They know when to do it.—M. Mahin.

I keep a record only of my fine breeding queens, and the older they are, the better for breeding purposes. I let my bees supersede their own queens.—G. W. Demaree.

No; let the bees manage it. I keep records of sale queens only. The bees do it better than we can, cost considered.—James Heddon.

Keep a record always. Thus you will know the pedigree, &c., and be able at any and all times to know the age of every queen in the apiary.—J. E. Pond.

Yes, keep a record of queens, but supersede them only when they decline in vigour. Superseding by rule would often depose queens of great value. The bee-keeper must have brains as well as a record.—J. M. Shuck.

I think that the bees can manage the matter for themselves. If queens are found that are doing very poorly, it pays to supersede them; but age is not the test. Our vision will serve better.—A. J. Cook.

As a rule the bees will attend to these matters more satisfactorily than you could possibly do, and before you are aware that such was their intention. It is well enough to know which hive your best queens occupy, and if you have many colonies it will necessitate a record.—J. M. Hambaugh.

I find that the bees manage that thing very successfully if you let them alone. You will find many cases where it is best to supersede, and you will not be obliged to keep a record to find it out. For a beginner in the business a record of all work is an excellent help.—H. D. Cutting.

I think that it would be a good idea to keep a record of the age of queens. I do not think, however, that it would be advisable to supersede queens less than four years old unless they prove inferior; in that case, do so at once. I supersede only such as fall below my standard.—C. H. Dibbern.

It is certainly best to keep a record of queens, but as to superseding the queens, the bees will manage that more satisfactorily themselves.—The Editor.

I would call particular attention to the answer of Mr. Doolittle, who is himself a large breeder of queens, as evidence in favour of the let-alone plan.—John M. Hooker.

SHALLOW FRAMES.

[1653.] A word or two explanatory as to the frame 6-inch deep sent out by myself.

Having convinced myself of the utility of a narrower frame than the standard for the purpose of storifying, &c., I was sufficiently bold to introduce it at Norwich Show in 1886 at a time when the standard frame was the *sine qua non*. The depth of shallow bodies (for use either above or below the standard body) was ruled for the working of 2-lb. sections, $5\frac{1}{4}$ inches deep, suspended in a divided hanger or frame, and side-spring dummies brought all work in that direction together as though crated in the ordinary manner. It may be now seen how a frame 6 inches deep was necessary to take the place of the 2-lb. section and its hangers of necessary strength, to keep all in position when stored with honey. Soon after the Norwich Show, 'Useful Hints' wrote, describing even such a hive as I had exhibited, and asks

—or to the effect—Who will give us such? and here we had a good recognition of the shallow frame. About such time the DEEP FRAME of Mr. D. A. Jones was acknowledged by some to be far ahead, and in an 'Universal' hive such a frame was to be used, which also admitted the standard and W. B. Carr frames if preferred. Hence 'Universal' and Bebington hives followed to have a place in the bee world market.

I do not wish to infer that these frames and systems did not exist prior to my 6-inch frame, but rather to show that when I knew they were to be put into the Market, was I willing to meet, if possible, the size of of our friend, W. B. Carr, and more especially as 2-lb. sections were then (1886) at a discount. Therefore a shallow body, differing from the original, was sent with my 'Holme Wood' hive to Mr. Cheshire, and from this Mr. Cheshire gave his figures no doubt.

At the end of that year I ran through orders executed during the past two seasons, and found it would be too much to ask of my customers to accept a 5½ in. frame; so I kept to my original depth, and the great numbers of 6-inch deep frames I have sold bear testimony of their utility, as well as many written acknowledgments received. With Mr. Dobbie I think that my patrons must feel from vested interests the 6-inch frame of as much importance as the 5½, and especially so as 2-lb. sections (now reascending) can find a place side by side with the former. Surely the B. B. K. A., having once set up 'A STANDARD,' will not weaken its position by another, but rather let its significance be shown in the clustering around it of the many divergencies before and after its adaptation.—JOHN H. HOWARD, *The Model Apiary, Holme.*

VALUE OF SMOKE IN MANAGING BEES.

[1654.] When honey was at the highest price ever known in this country, viz., from 1863 to 1866, little use was made of smoke by the greater number of bee-keepers. Even Rosewell C. Otis, the veteran who mainly introduced the Langstroth hive in New York and the West, only used a cigar in his demonstrative work. It is true that Mr. Langstroth had explained the action and value of smoke in the control of bees, and the principle on which its effect rested, in his most efficient work, *Langstroth on the Hive and Honey Bee.*

Hunters of bees had used burning straw about bee trees when cutting them down, and found the cloud of smoke a protection against stings. But the main conception of the value of the smoke in the management of bees was associated with the common pipe or cigar. This fact, no doubt well based, came from the prompt action of tobacco-smoke,—an action more efficient than any other smoke, and also more convenient with the means then in use, especially when the bee-keeper was a tobacco smoker. (And such habit was likely to prevail with bee-keepers whose aversions to the habit of smoking were not strong.)

The invention and application of the direct-draft principle in bee-smokers at once revolutionised the management of bees. Tobacco-smoke was no longer of value because more condensed and in use by pipe and cigar smokers. The great abundance—a cloud of smoke enveloping the user of a Bingham smoker, and the fact that such smoker never went out, and that smoke in clouds could be instantly applied to bees—at once supplanted the tobacco, pipe, and cigar in their management. While it is not the province of this paper to discuss the tobacco habit, the direct-draft smoker plays an important part, as there is no excuse for a bee-keeper smoking tobacco so far as bee-keeping is concerned.

The fact that bees fill their honey-sacs with honey when frightened, and do not, when so filled, volunteer an attack, and the ease with which smoke is applied, has led, no doubt, to the abuse of smoke in managing bees. Bad habits are common from superficial methods of reasoning, when a more thorough analysis of apparent results would eradicate or modify them. This is especially true in the use of smokers, and the smoker in the case of the apiary. The fact that a cloud of smoke around a bee tree reduces the anger of the bees, and removes the danger of attack from them, leads directly to the conclusion that such cloud of smoke would have the same effect in an apiary. Circumstances which have come under my observation lead at once to this conclusion. As an evidence of the fact allow me to cite the sale of smokers at certain seasons of the year, and the sizes most sold at such season.

The inference from the sale of any particular sizes of smokers, at a season when smokers are not much in use, is that the most experienced bee-keepers provide themselves with such tools as they are likely to need before they are actually required for use in the apiary, while the amateur waits till the case becomes urgent before he decides, and then is likely to consult the first cost (which he sees clearly) rather than the results and principles underlying his purchase which he does not so clearly understand.

Early in the spring, and also in autumn, our sale of smokers is as five of the two largest to one of the smaller sizes; while in the middle of the season, when the young bee-keeper is obtaining his urgent outfit, the small and medium-sized smokers lead in sale the three largest sizes somewhat, so that the entire season wings round with about the same total number of each as sold. As the larger sizes hold more wood and make as much more smoke in proportion, it is safe to infer that bee-keepers of experience do not object to an immense volume of smoke in handling bees.

This conclusion, providing the premises on which it is based are correct, leads to the decision that bee-keepers, whether they understand the principle or not, recognise the value of a continuous cloud of smoke in the apiary at all times when bee-keepers are of necessity or choice among the hives and bees.

It is idle to presume that a peaceful, non-aggressive apiary can be found where gloves and veils are resorted to instead of constant and overwhelming smoke. With abundance of smoke, the eye of the bee-keeper holds the temper of bees as the experienced horseman holds the vicious horse, and any careful manipulation may be made without a puff of smoke, provided always the smoke is abundant in the air, and at the service of the operator should occasion require.

The above leads directly to the most discussed fuel for smokers. Of course circumstances alter cases, and the means of obtaining fuel of any particular kind will play a conspicuous part. One thing, however, will be found advisable under all circumstances, viz., to consult the smoker. It is useless to try to burn anthracite or hard coal in a box stove designed for burning wood. It would be equally futile to attempt to burn stove wood in a smoker not having a strong, continuous draft. This being understood, a clear understanding of principles leading to results desired, it seems to me but one conclusion can be reached, viz., that sound sun-dried or other perfectly dried maple stove wood, meets, in the highest degree, the needs of the bee-keeper using a direct draft smoker.

Some of the reasons why perfectly dry hard wood is preferable for use is that it burns only at the bottom or lower end. That is, it renders the direct-draft smoker a base burner. (Rotten wood burns all over and is soon gone.) Wood in sticks does not obstruct either the draft or blast, both of which render quick and continued action easy. Sound wood which has live coals left after it has ceased to smoke, maintains sufficient heat to prevent unpleasant sooty accumulation, and furnishes hot, dry, strong smoke all the time without working the bellows, thus rendering it ready for use every instant. Of course

the direct-draft smoker will burn anything combustible, and he who uses it may choose his fuel according to circumstances and tastes.

It may be asked here if it would not be better to have cold smoke. Such an idea has been advanced very much, but as the object of smoke is to frighten bees, not convert them into bacon, anything that will accomplish the fright in the easiest and most effective manner will serve the purpose best. Hot air will do this just as well as smoke, as far as it goes, but the air cools, so quickly it is of no value except just as it leaves the smoker. The making of smoke goes on fast or slow just in proportion to heat, so that when there is little heat there is little smoke, and *vice versâ*, where there is much smoke 'there is some fire.'—T. F. Bingham (*From the Beekeeper's Guide*).

EXPERIENCE.

[1655.] I have twelve hives of bees. Last year I bought some starch and salmon boxes, as I could not afford 8*s*. to 10*s*. for bar-frame hives, so I made some makeshift hives out of these boxes. I bought a bit of $\frac{3}{8}$ in. board for making the frames; the frames are as near standard size as I could make them. The salmon-boxes had to be cut shorter, 16$\frac{1}{2}$ in. in length. The swarms I had last year were put into them. They were dummied up to six frames. A crate of twelve sections was put on the same time as hiving. The first swarm gave thirty-six one-pound sections, the last gave twenty. I gave one-inch starters of foundation on the frames, and nearly filled the section. In the autumn I bought some boards and made some good standard hives holding ten frames. I bought the little book *Modern Bee-keeping*, and consulted it, and made the hives as near as possible to those in it. It is a useful little book: I think every cottager ought to buy one; its cost is only 6*d*. As soon as my hives were finished and painted, I brought the bees into a warm room and shifted them into their new hives, and packed them up for winter; and now, May 17th, I think they are in good order, one hive especially. They are on ten frames, drones flying freely. Three of the straw hives are full of bees. I am expecting them to swarm every day. The other frame-hives are on six frames. I am going to give extra frames next week. I will give you a few names of flowers near me. My bees have been working on palm, wild anemones, wild cherries, and blackthorn; next come the May and maple trees. I shall write again a little later on.—Haybinder.

GIVING A LAYING QUEEN TO PARENT COLONY IMMEDIATELY AFTER SWARMING.

[1656.] For years we have been told that no colony should go without a laying queen for a single day, if it were possible to give them one; and plans of introducing queens which required that the hive should be queenless a few days previous have been severely criticised. We have also been told, for years, that the bee-keeper who wished to secure the best results from his bees should have a laying queen ready to give to each old colony as soon as they swarmed, as the time lost to them, by rearing a queen, is equivalent to a swarm of bees. Being eager to know for myself all the plans which would give the best results, I have experimented largely; and the truth of the statement, that the time lost to the bees in rearing a queen in natural swarming was equivalent to a swarm of bees, is the first reason that the plan has not been a success with me. If it were bees I were after, the case would be different. With us white clover yields enough honey to keep the bees breeding nicely, and prepares them so that they mainly swarm from June 20 to July 1. Our honey-harvest is principally from basswood, which blooms from July 10 to 16.

Now, all who are familiar with natural swarming know that the bees are comparatively few in number in the spring, and increase by the rapidly increasing brood produced by the queen, which, in due time, hatch into bees, until a swarm is the result. By giving a laying queen to a colony immediately after it has cast a swarm, we bring about the same result (swarming), as before, or we place the bees in the same condition. The only difference is, that, having plenty of brood, they built up quicker, and are prepared to swarm in a shorter time. As this second swarming, brought about by giving a laying queen, comes right in our basswood-honey harvest it cuts off the surplus honey; for it is well known that bees having the swarming fever do little or no work in the section boxes; and, if allowed to swarm, the object we have sought after (section honey) is beyond our reach. Having given my experience on this point, let us see how the same colony would work had we not given the bees a laying queen.

Eight days after the swarm has issued, the first young queen will have emerged from her cell, as a rule, when the apiarist should remove all the other queen-cells from the hive, so that second swarming is entirely prevented. In ten days more our young queen is ready to lay, which is about the time basswood begins to yield honey largely. During the period between the time the swarm issued, and the young queen commences to lay, the bees, not having any brood to nurse for the last half of the time, consume but little honey; hence, as fast as the young bees emerge from the cells, they are filled with honey: for bees not having a laying queen or unsealed brood seldom build comb in the sections. Thus, when the young queen is ready to lay she finds every available cell stored with honey. At this point the instinct of the bees teaches them that they must have brood or they will soon cease to exist as a colony, and a general rush is made for the sections. The honey from below is carried above, so as to give the queen room, and in a week we have, as a result, the sections nearly filled with honey. I have had such colonies fill and complete section honey to the amount of 60 lbs. in from eight to twelve days, while those to which I had given the laying queen immediately after swarming did little but swarm during the same time. Bear in mind, we are talking about producing comb honey, not extracted. Different locations may give different results; still, I think that nearly all sections give a large flow of honey at a certain period during the season, rather than a steady, continuous honey-harvest the whole season. To such sections these remarks are especially applicable. My second reason is, that after basswood we have a honey-dearth, hence the bees from the introduced queen are of no value, but, on the contrary, become consumers. On an average, it takes twenty-one days from the time the egg is laid to the perfect bee. Then if the colony is in a normal condition, this bee does not commence labour in the field till six-teen days old; hence, the eggs for the honey-gathering bees must be deposited in the cell thirty-seven days before the honey-harvest ends, or else they are of no value as honey-producers. As the basswood is all gone before the eggs of the introduced queen become honey-producing bees, and as the larger part of them die of old age before buckwheat and fall flowers yield honey, it will be seen that a great gain is made by letting each old colony, having cast a swarm, rear their own queen; for thereby we save the expensive feeding of the larvæ, which are to become expensive consumers of the honey of the hive. Also the chances are, that, when the colony rears its own queen, they will be stocked with younger bees for winter-ing in November than where a queen was introduced immediately after swarming.

The one point worth knowing above all others in bee-keeping is a thorough knowledge of the location we are

in, as to its honey resources, and then getting the largest amount of bees possible at that or those times to gather honey, having just as few at all other times as is consistent with the accomplishing of this object.

In working so that we get the bees out of season, we have to pay the same price for them that we would to get them, so that each one becomes a producer instead of a consumer. If all who read this article will study their location, and then rear their bees in reference to that location, I think they will find their bees will do as well as their more successful neighbours'. We often hear it said, that one colony in the apiary did much better than the rest, and, had they all done as well, a rousing crop of honey would have been the result. The reason *that one* colony did so well was because it happened to have a large proportion of its bees of the right age to gather honey just in the honey-harvest; and if we can get all in this condition we can assure a like result from the whole apiary.—G. M. Doolittle, *Borodino, N. Y., April 2*, 1888.

SELECTED QUERIES AND REPLIES.

[1657.] Replying to 'R. M.'s' query, it may not be amiss for me to give him my plan of wintering bees on three or four frames, as he asks Mr. Raynor to give his plan on page 239. I get driven bees, saving those queens that I know to be young, and put them on about four frames (some more), and feed them up in the autumn. They are placed in hives only ⅞ inch thick, and shut up close at side with one dummy, the other comb goes up near to the side of the hive, with an entrance about 1½ inch or 2 inches long. These lots I place in pairs about my garden, and in spring I take queen away from one lot, when I get orders for them, and join the bees and combs to the next lot, and by that means I get a fair stock. I wintered over twenty in this way this last year, and did not lose a single lot. I merely cover the top up warm with two or three quilts and a folded rice-bag, and lay a roof right on top, and tie them on so that they cannot get blown off; there is no protection at the sides. In answer to same questioner of May 10th, by my saying 'shut up close,' I do not mean the bees were not to be allowed to come out, but to only have a small entrance, but to be shut up close with a dummy, and fed and stimulated. I had in my mind a case, about three years ago, when I sold sixteen stocks to a gentleman at Cheltenham. I offered him at a price these stocks, and included this same nucleus with a Carniolan queen and bees only on two frames, and a few others on the third. However, he did not have this said nucleus, and it was quite at the end of April. I fed them and inserted a frame of foundation in the centre of the brood-nest, and looked to them, so that they never wanted for food, and as soon as they had filled the frame of foundation and sealed up brood, I gave others, till I got ten frames well covered with bees, just in time in June, when honey was coming in well; and I supered them, and took over thirty 1-lb. sections from them. I did not give any brood at all from other hives.—John Walton.

AFTER THE WINTER.

[1658.] After reading with interest the notes of a correspondent from Farnborough, in a late edition of your *Journal*, I feel anxious to describe a somewhat opposite state of things to those which he was fortunate enough to find in his colony. Of four good stocks last autumn, but two are left to start this season. One of the survivors was from a straw skep, and the other from a bar-frame hive. Now, why are the others dead? not because, as your correspondent remarks is often the case, too much honey was taken last year, for there were at least two bars in each hive with two or three pounds of sealed honey in them. Why had the bees not helped themselves? or may it be that the extreme coldness of our early spring prevented them from coming on to the bars for food till it was too late? If so, what could have saved their lives? An extra supply of honey would in this case have been of no avail. You may be interested to hear that the stock from the straw skep was most successfully transferred into a frame-hive one fine day last week. There was not much brood-comb to be removed, but one or two pieces were wired on to the new bars, and by now they seem to have settled down to their new quarters most comfortably. With best wishes for a good honey-bee season, my notes from the Anerley colony must be concluded.—Brathay.

NON-ALCOHOLIC DRINK.—No. 1.

[1659.] One ounce of citric acid dissolved in two pints of water, this gives us a fluid about the strength of lemon juice with its good chemical action on the liver and stomach. A tablespoonful of this, ditto of honey, in a tumblerful of water, gives a perfect cooling summer drink, but having the objection that it will not keep. It should be kept prepared in its acetous form, honey and water being added when mixed for drinking.—R. A. H. Grimshaw.

NON-ALCOHOLIC DRINK.—No. 2.

[1660.] One pound of clear extracted honey to one bottle of the Montserrat pure lime-juice. These can be mixed a few bottles at a time. The writer has used this drink the last twelve months continuously, but for a summer beverage it cannot be beat. Mix three parts of water to one part *lime-juice and honey*; some prefer more water. If mixed in cold weather, the honey must be warmed. —Another Bee-keeping Abstainer.

INFORMATION DESIRED.

[1661.] Will experienced bee-keepers give me any information they can? First: On the possibility of beginners being able to procure bees in the neighbourhood of Queenstown, Cape Colony, and about what price should be paid for them? Second: As to the likelihood of colonists being able to take out stocks or swarms safely from England, and the best way to pack said stocks?—M. E. Eyton.

WHAT MAY BE DONE IN A CASE OF EMERGENCY.

[1662.] If I shall not be trespassing on your valuable space I should like to say what experience has taught me last summer and this winter, as I think it may be interesting to some of your numerous readers. I live on the border of the remnant of Sherwood Forest, there being several apiaries in the village, my small one amongst the rest. Last summer there was a swarm left my next neighbour's apiary and took up its abode in an unused chimney. The owner not wishing to fetch them out, I asked if I might do so. Having got his consent I at once went to the occupier of the premises and asked his leave, and it was given at once. In examining the place, I found it was a chimney belonging to an out-building, the gable end to the orchard, with a parapet wall about twelve feet high, flat top, running from the gable end. I took with me an empty straw hive, also some scorched rag. The chimney was built up from the inside of the room, but fortunately there was a hole into the chimney I could use. I at once set fire to the rag, and with a thin rod of wire pushed it into the chimney, smoking the bees out at the top. I then placed a ladder on the wall and rested it against the gable end of the building. When at the top I found a flat stone covered

the top of the chimney, to the underside of which a previous stock of bees had built comb, but had died and left it unoccupied. The swarm had taken possession of the comb and had been working in it for several weeks. When I lifted the stone I broke down some of the comb, but there was a good quantity left attached to the stone, which I turned upside down and carried down on my head, and laid it on the wall the same side up I had carried it down the ladder. I then pulled up some long grass and brushed the bees that had settled on the outside of the chimney into my skep, brought them down and placed them over the stone. In an hour they had settled to the skep. In two hours I took a cloth and laid it on the grass in the orchard, carried down the stone and skep, placed them in the centre, tied the four corners above, putting a strong stick through. With the assistance of my son I removed them to my apiary, where I had an empty bar-frame hive with comb worked out. I shook the bees out on the bars, having set them about two inches apart, covering quickly with an empty sack; they settled down in a short time. The next day I put the bars the proper distance, the bees all the time being very busy. I examined the hive this morning, and find that they have gone through the winter well, and cover about six frames two inches deeper than standard size. Being the first bar-frame hive I possessed I still keep it, the bees always working fairly well in it.

If you think it will interest any of your numerous readers I shall be glad to say in another letter how I succeeded in transferring a stock the last week in November.—W. Robinson, *Mansfield, Woodhouse, Notts.*

[We shall be pleased if you carry out your promise.—Ed.]

WAX SECRETIONS.

[1663.] All bee-keepers know the origin of wax. It is secreted by thin membranaceous glands just beneath the ventral segments of the abdomen. These glands take elements from the blood and form the liquid wax; which, by osmosis, passes through the eight wax-plates and is moulded as thin scales on the outside of these plates.

In most all cases secretion is wholly involuntary. From analogy then we should suppose it would be in this case. The cow has no control over the milk secreted in the milk-glands as to time of secretion, quantity, or quality. No more have we as to whether our salivary glands shall secrete spittle or not, or whether our liver shall form bile, or our pancreas its peculiar liquid. In case of bees then the burden of proof rests with him who believes that the wax-glands of bees are under the control of the will.

Some years since, when foundation first came into use, I felt that this was an important question, and I attempted its solution as follows: I hived three good prime swarms; one on empty frames, one on foundation, and one on empty combs, and then weighed each, each day, after the bees had collected in the hives for the night. I found that the colony without either comb or foundation gained in honey much more slowly than either of the other two, and that far less bees flew. The other two colonies increased nearly the same, but the gain was slightly in favour of the colony with combs. Since then I have had my students try the same experiment, with similar results; except, in one or two cases, the colony on foundation has done the best.

Now one of two things must be true. Either the bees have control of this function, or else, by their action, whether of rest or motion, they indirectly control secretion. The horse that works very hard raises a poor colt, because she cannot do so much muscular work and secrete enough milk for her offspring. I wish to fat my fine shorthorns for the shambles at Christmas time. I shut them up in a warm, comfortable, quiet stable, and give them no exercise. If they have to eat to supply muscular force they can furnish less for fat. Now, it would seem that this might explain the fact given above. When combs are to be built the bees hang quietly from the top of the hive, eat much; and, as no muscular force is to be expended, much wax is formed. When the mare works hard she forms little fat or milk; when quiet she may produce much of both. Likewise the bee; only the condition of the hive is what induces the action or quiet.

But there is one more tangle to this knot: when bees are hived in an empty hive, we find that even the field bees are secreting wax. Nearly every bee will show the scales. On the other hand, put a swarm into a hive full of empty combs, and it is difficult to find a bee within or without with the wax-scales in the wax-pockets. I have repeatedly noticed this in looking for bees with the wax-scales to show my class. Here it must be voluntary, unless the bees do less outside work in the one case, and so use vital energy to produce wax, and more in the other, and so do not have any vital force remaining to secrete wax.—A. J. Cook, *Agricultural College, Mich.*, (*American Apiculturist*).

BIRDS AND FRUIT TREES.

[1664.] Sparrows destroy buds and catch bees, too, and will soon destroy peas, when they are beginning to appear above the ground, unless they are protected. Some people say they destroy crocuses, &c.; others say the great tits destroy bees; I have often watched, but have never seen them take any but dead bees: they feed mostly on insects. I should never think of destroying them. Surely in these days of invention those gentlemen could think of something to scare away birds: there are imitation birds of prey to be bought from Hickman and Clive, Wigan. There are directions given in *Gardening Illustrated*, May 26, to frighten sparrows. We never know the want of water till the well is dry, and birds will never be missed until they are gone. When I see the mischief done to plants by insects I often wish there were more birds. Bullfinches do not take hawthorn, wild cherry, sloe, blackthorn, myrobella. Here I have fed them during the severe weather in winter. Cherries were only about two hundred yards away, but they never touched them.

I have had the management of many stocks in this neighbourhood. If short of food I feed my bees until the white clover appears. I always think of what an old bee-keeper said to me when talking about flowers; I asked him why he did not grow them, his reply was, 'I leave the farmer to do that.' I think we may conclude the same. It is the acres of clover, trefoil, and alsike, and the ten thousand blooms which we must depend upon: at least such has been my experience. When the snow is on the ground I have seen the bullfinch clinging to the blackberry cane, and his lovely colour contrasting with the snow, one of nature's lovely pictures which ever present themselves to the eye of the observant traveller. I have also seen the goldfinch eating the thistle-seed, and the woodlark up in the clouds, the music falling to the earth: alas, you look and listen in vain! for the birdcatchers have caught them up in Staffordshire. The Psalmist sang of them in his day: 'By them shall the fowls of heaven have their habitation, and sing among the branches,' and Solomon rejoiced to sing of the 'birds of spring.'—T. Hill.

THE JUNIOR COLUMN.

'Something for the Boys.'

[1665.] I also think from the contributions we got to the Tom-tits Problem that we could muster a fairly good staff to our Junior Column, and I feel it my duty to reply to Master Freestone. The readers of this column will be sorry to hear that I have been unsuccessful in my pursuits of last summer. I had half my stocks of humble bees ruined last autumn during

my absence from home by boys coming and playing with them, and when the bees flew round them, they struck at them with their hats. I fear also that I didn't keep my stocks strong enough, and had not plenty of bees to keep up the temperature.

For fear of starving them, I bored a hole in the top of the box, and put a section over it, and a piece of glass over that, and the syrup in a tin-lid inside. The drones are easily distinguished by a light yellow stripe down between the eyes (*Bombus terrestris*), which I notice neither the workers nor the queen have got. I find the workers get so that they don't care where they go and ramble away—I think to find a place in which to die in peace.

One time I kept my bees in an attic, and had no queen, so all the workers died off, and the drones, as they hatched, were so miserable that I could not keep them prisoners any longer.

I have tried catching a queen early in spring with the intention of persuading her to build with me. She would fill her honey sac with syrup, but would not build under observation. No doubt she had a home of her own already made elsewhere. My book on humble bees says:—'My observation of the colonies I have kept has always dated from about this stage. I have never been able to induce a queen to commence house-keeping under observation. I have kept the young queens from my nest till the following spring, as well as those captured in the fields late in the autumn, and I have also tried with two caught in the early spring. My colonies have always been taken from the meadows.' I got a nest last autumn without a queen, thinking if I kept workers all the winter, I could introduce a queen in spring, and have kept them in a glass tumbler, putting bits of an old nest round the sides of the comb to keep them warm. In the middle of the day we used to let them fly out in the house, and they would take bearings, and then go to cull nectar from the flowers on the wall-paper. I am certain they went for the flowers, because they avoided the leaves, which were not so brightly coloured as the flowers, therefore not so attractive to the eyesight; and when they found there was nothing to gather, they seemed to rest awhile (I fancy they looked disappointed), and then either flew to the light or back to their tumbler home.

I trust we shall have some more contributions from junior bee-keepers interested in our column.—Darcy Grimshaw, *Cray Hill, Horsforth, near Leeds.*

A LETTER TO AN UNCLE.

A Young Bee-keeper Inserts Three Frames by Written Directions.

[1666.] When I got home on Friday night my father gave me a letter of yours to read, which I did with great care, so that I might be able to manœuvre in some degree right.

After dinner on Saturday we went to Dixon's, and I bought the things you mentioned in your letter, and then we set off for Stapleton; and when I arrived I saw the hive down there for the first time, and was delighted with it, and also the place where you had put it; and I am sure I cannot thank you enough for the trouble and pains you have taken in getting it down so nicely for me.

We put the foundation into the broad-shouldered frames, and then took them and placed them against the wall; we had veils, pipes, and apifuge on our hands. I then took the top off the hive very carefully, then turned the covers over to the dummy, loosened it with my knife, blew a few whiffs in, put covers back, gave hive a little kick or two, then turned covers back. Bees were nice and quiet; and then while I moved dummy back, Gov. put the new ones in, which just filled it up; and altogether we did it, I think, very well, and ever since I have felt as if I could be looking at them every other minute,—in fact, I can feel a bee fever coming on very strong, and I believe in a short time I shall be an out-and-out bee-fancier.

Now I must start with what I ought to have done at first, but which I feel most unable to do in words, which is to thank you sincerely for the very handsome present you have made me, and the happy times it will give me in the future.—Your affectionate nephew, David G.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

J. M., *Glasgow.—Honey-Boards.*—In answer to your query, see in our correspondence columns letter (1649) on 'Honey-Boards.'

A. C.—*Swarm-Feeding.*—It is always best to feed swarms during the first week after issuing whatever the weather may be. The necessity is evident when we consider that almost the whole population is required for the elaboration of wax wherewith to build the new combs, the amount of honey consumed in the process, the degree of heat requisite, and the few foragers which can be spared.

One in Difficulty.—*Swarming.*—See 'Useful Hints' during last and present month in the *Journal*, where directions are given for placing the *swarm* on the parent stand, and upon it the super arrangements, setting the *parent stock beside* the swarm, and uniting in the autumn. To prevent swarming give plenty of room for storing surplus, by placing section-case under section-case; and if the weather prove hot, air below the brood-chamber, by inserting small wedges at front and back. This plan is better than returning swarms.

Forethought.—*Late Breeding, Transferring, &c.*—Want of pollen probably prevented the queen of your condemned bees from breeding earlier. With so little brood towards the end of May you must not expect surplus this season. Give more frames, with sheets of foundation, as the bees require more room. Allow your skeps to swarm, and place the swarms in frame-hives on sheets of foundation, setting them on the stands of the old stocks, and placing the latter close beside the swarms, with the entrance turned away from that of the swarm; and in the autumn you can transfer from the skeps to the swarms, making the latter strong for wintering. If the honey-season prove good, super the swarms with sections about a week after swarming.

W. D. Griffiths.—*Brown Sugar Feeding.*—The 'experienced bee-keeper' who advised you in the autumn to give 6 lbs. of brown sugar on newspapers over the frames, gave you very ill advice. The deliquescing of the sugar, rendering bees and combs a damp, sticky mass, was a necessary result. In future you will do well to adhere closely to Mr. Cowan's advice, and feed on syrup according to his recipe. We never knew syrup, when properly made, to cause dysentery. At all events, if it does so in frame-hives, it will also in skeps. When you consider the myriads of colonies of bees now kept healthy and prosperous in frame-hives in this country, you surely cannot think of going back to the old 'sealed book,' the skep, with all its disadvantages.

Wood Green.—*Pollen Feeding.*—This is conducted in the following manner:—Procure a box, such as a Hudson's extract of soap box; in this place some shavings and over the shavings sprinkle pea-flour. To attract the bees to this box place a few drops of honey on the shavings. A lid must be provided to keep out rain, and the box should be raised a little above the ground as a preventive to dampness. It is too late now for pollen-feeding, bees will not take artificial when they can get natural pollen.

Kia te Whiki.—*Removing Bees from Cottage Roof.*—An ordinary smoker is quite sufficient if you can get near the combs. The combs must be cut out, the portion containing brood tied into frames and placed with some or all of the bees in a box and so transported to the place required. If you can secure the queen and a few bees, make them ascend into a skep placed close to where combs have been removed from; in an hour or so, if done towards night, all the bees will join them; they can then be taken away. Some bees must be put with combs to keep brood from chilling.

J. White.—*Returning Swarm to Bar-frame Hives.*—The queen-cells in the hive must be cut out and the old queen run in with the swarm or remove old queen from swarm and cut out all but two queen-cells. *Drone-comb.*—Always allow a few inches of drone-comb in stock hive.

A. O.—*Porch.*—We have tried a very similar plan by having a piece of zinc hinged on front edge of porch, and found it acted well in preventing bees from flying in bad weather, especially when snow was on the ground.

S. A. B.—1. *Honey at Highgate.*—You will not get much honey except from the lime-trees in July. Have your bees strong then. 2. *Lilac.*—Lilac is not found of much use to bees except for pollen.

Wm. Mitchell.—*Suspicious Comb.*—This appears to be chilled brood only. The circumstances detailed by you support this view. Your plan should do.

Bedford.—*Pollen-bearing Bees.*—The proportion of bees carrying pollen varies under continually changing conditions. We have counted the bees entering a very strong, prosperous colony, with a young queen who was breeding very fast, and found about ninety entering during a minute, of which about fifty were carrying pollen, as many as eighteen pollen-bearers marching in without any non-pollen-carriers intervening. Later in the same day at the same colony we have counted seventy per minute, of which not more than six carried pollen. We do not therefore consider your query can be inserted as a *Selected Query.*

Correction.—The article, 'The East Coast of Florida,' on page 224, was credited to *Gleanings*, from which it was taken. It should have been credited to the *Bee-keepers' Magazine*, in which the original appeared, Mr. Detwiller being special correspondent to that Journal.

Business Directory.

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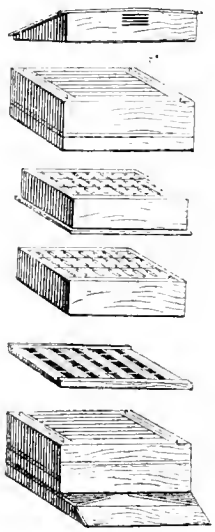

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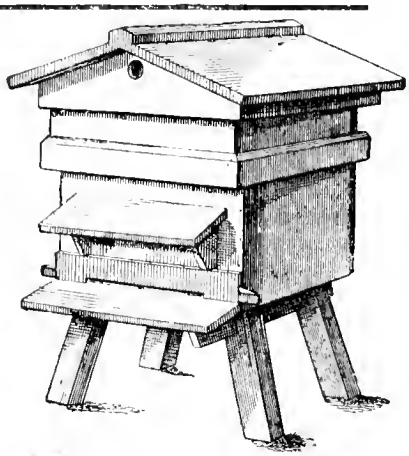

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THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

[No. 311. VOL. XVI.] JUNE 7, 1888. [PUBLISHED WEEKLY.]

Editorial, Notices, &c.

BEE-MASTER OF A CENTURY AGO.

A friend recently sent us a copy of the original edition of '*The Bee-master's Companion and Assistant*, wherein is set forth the properest Methods of managing those Insects, so as they may turn out to the best advantage. Shewing an effectual Way to preserve them from Famine, Cold, Robbers, Mice, or other Enemies: also how to make all your Hives equal in Bees, so as never to have any weak Hive; with an Account of the Power the working Bees are invested with, of raising any egg in the Hive to be a Queen, when the Community stands in Need of One. By James Bonner, Bee-Master, Auchencrow, near Berwick upon Tweed. Printed for the Author, 1789.'

This is rather a long title, but we have thought it as well to give it in full, even though it may be not unknown to some of our readers best acquainted with bee-literature. The book itself is well worth careful perusal on several grounds. In the first place, it is extremely interesting to learn how much was known a century ago regarding what we are apt to think quite modern methods of apiculture. Indeed, as one reads this old volume, there continually occurs the thought of Solomon, 'There is nothing new under the sun.'

Secondly, it is curious to note some of the few errors into which the author fell, and to observe the points in which what he intended as crucial experiments failed.

Thirdly, we cannot but admire the ingenuity and dexterity with which Bonner had recourse to special expedients for particular difficulties.

In a chapter headed 'An uncommon disaster, sometimes, though rarely, happening to Bees,' it seemed as if we had come on sad experiences of 'foul brood;' but due consideration of the description leads to the conclusion that the 'disaster' was nothing worse than some bad cases of 'chilled brood.'

Lastly, there is a good deal of kindly sarcasm towards those who differ from the author, reminding us not a little of certain letters which are to be seen, from time to time, in modern controversies,—aye, even in the *Bee Journal*.

Believing, then, that our readers may be both interested and instructed by an introduction to Master Bonner, we will give some illustrations of our remarks under each of the above-mentioned heads.

Among facts of greater or less importance, some of which are far from being even yet widely known, we will take the following. In speaking of the keen sense of odours possessed by our favourite insects, he says,

> 'If one be stung by a bee, the rest immediately smell the poison, and come enraged, and fly and pursue the wounded, and give him some more of the same, if his feet be not swift enough to carry him off from their territories.'

From this well-authenticated observation the beginner in bee-keeping may learn this practical lesson, to be so careful in his manipulations that he avoids getting a first sting; for we may, without any irreverence, assure him that he will certainly find to his cost the truth of the Divine principle, relating to evil as well as good, 'to him that hath shall be given, and he shall have abundance.'

Again, Bonner discusses, with much good sense, the name of 'queen' as applied to the mother of the hive, and shows that she possesses no actual authority, but that all the attention and deference displayed to her are the result of an instinctive regard for the individual on whom the existence of the community depends in large degree. In the enforcement of this point he alludes to what is not yet universally received as being the case, viz., that, at swarming time the queen does not *lead* the departing host. He says, 'I have oft seen, when Bees swarm, the greatest part of them out of the hive, and lighted on a bush before the Queen had left it; and when she did, she went directly to them.' It is now well ascertained that in many, if not all instances, scouts are sent out to reconnoitre and decide upon a suitable place for the settling of a swarm, and that their selection decides the spot of alighting.

Bonner gives other noteworthy details relating to queens. One is that they can, only with the greatest difficulty, be induced to use their stings, and, with the acumen of a philosophical spirit, he adds as a reason,

> 'The wise Orderer of nature disposes her to be of a peaceable temper: for were she hostile in her disposition, and drew her sting on every affront, and left it in her antagonist, it would be of dangerous consequence to

the hive; as every bee that leaves the sting dies soon after.'

Our author was perfectly acquainted with methods for artificially rearing queens, and quotes Debraw's article in *The Universal Dictionary*, in which details of successful experiments are given. He adds,

'The practice of this new art, Mr. Schirach tells us, has already extended itself through Upper Lusatia, the Palatinate, Bohemia, Bavaria, Silesia, and even in Poland; in some of these countries it has excited the attention of Government, and even the Empress of Russia has thought it of such importanee that she has sent a person to Kleen-botzen to be instructed in the general principles and learn all the *minutiæ* of this new art.'

Bonner then details his own experiments and observations, which had led him, long before he had read Debraw's article, to conclude that the workers could and would raise queens if deprived of the mother-bee. Moreover, he seems to have been well acquainted with 'direct introduction' (*pace* Mr. Simmins), for he speaks thus confidently :—'If you take a native Queen from a hive, and put a stranger to them, they will be very fond of her, and should you return their mother to them again, they would fall on her like as many lions.'

The peaceable disposition of bees when being driven, and, indeed, whenever thoroughly terrified, was well known to him. He says, 'When combs are to be taken out, they must first be frighted into good humour, by rapping all round their hives; and that is the alone way to tame Bees, viz., to frighten them; after which they will not in the least offer to sting, if you do not press them.'

He evidently had not tried the virtues of smoke, and carbolic acid was then among the undiscovered aids to apiculture. However, he was not altogether insensible to means of self-protection. He naively remarks:

'All the harness I use is a piece of thin canvass, wove very thick, a yard square. This I put over my head, and drawing it together about my neck, I fix it with a garter. I then put on a pair of gloves, causing a person to tie my coat-sleeves close on above them, so as not one bee can get up betwixt my arms and sleeves. The canvass being wove almost as thin as a sieve, permits me both to see and breathe.'

His experience as to the effects of being stung seems to accord accurately with that of modern bee-keepers. On this point he remarks:

'The seldomer I am stung the more pain I feel, and swell the more; if I am stung once in three weeks, I feel some pain and swell a little; but if I be stung once, twice, or thrice in a day, I value them not a pin. I have received twenty stings in a day, and swelled scarce any. The reason I pretend not to account for, but leave it to those of more penetration to discover.'

He evidently had a keen appreciation of the natural advantages for apiculture possessed by certain localities. He thus describes his ideal district :—

'I have often thought had I exaetly my wish where to set bees, it would be in a hollow glen, with a large wood on one side, a large garden on another, a white-clover field before them, and a large heather muir intermixed with a deal of whins and broom behind, with some wild mustard and runches to fill up the corners.'

We are sorry to confess our ignorance of the last of these *desiderata*, but we can heartily endorse the wish that we could all have the rest of his proposed surroundings for our apiaries.

There is no point on which Bonner lays more stress than on having and keeping strong stocks. He gives numerous directions for 'uniting,' and for adding bees to weak colonies, and was well acquainted with the art and utility of the 'driving' process. For feeding, however, he had a great contempt. He calls it 'the bee-master's last shift,' and considers all who need to adopt the expedient as very foolish or very unfortunate apiarians. In his argument against having recourse to it, he breaks out into 'border dialect,' and cannot forbear a thrust at human 'sponges.' These are his words :—

'I am certain that in the best method that can be taken to feed bees, they will spend more honey than they do when they have to pickle it out of their own poke-nook; not unlike some of a higher species that are very moderate of diet in their own homes, but but can make very merry when abroad, and nothing to pay.'

We conclude our extracts on practieal matters with our author's opinion as to the relative advantages of mild and hard winters to bee stocks :—

'Most all writers say that a fine winter is dangerous for bees, and far more die than in a cold one, alledging that their going often out increases their appetites, and they spend their provision, and thereby often die of famine; whereas being long confined in their hives in bad weather, they scaree eat any at all. I own that in a fine winter they eat some more food than in a winter that they scarcely get ever out by cold or cloudy weather; but in a fine winter the bees getting often out in sunny fresh days, it is greatly for their health, and they die not of eold; besides they fall a-hatching, and thereby keep their hives fuller of bees.'

We have no doubt that this conclusion is a correct one, and that, given plenty of stores, stocks, as a rule, will prosper best in a mild winter succeeded by a favourable spring. Let us hope such a season is in store for us in the present year.

USEFUL HINTS.

Here, in East Anglia, on this 2nd day of June, we are still longing for rain. We hear of refreshing copious rains from all parts, while our gardens and fields are parched, and, throughout the last month, have suffered more or less from severe night frosts and unceasing east or north winds. All this is very tantalising to ardent apiculturists. We hear and read of supers filling apace, but our strongest eolonies, as yet, have stored no surplus.

During the last few days, however, we have enjoyed a higher degree of temperature, and a large quantity of pollen has been carried home by the bees. The lateness of the season may be judged from the fact that the May, or whitethorn bloom, is only just opening, and for several weeks to come will be a source of forage for our bees. Trefoil and other meadow blooms are becoming abundant, and if only we could obtain an abundant rain

with warmer weather, to usher in the white clover, a plentiful honey-flow would quickly follow.

The honey from fruit-bloom and a few other early sources has been utilised for by the bees brood-raising, and healthy colonies are overflowing with population.

Prevention of Swarming in such case is a great desideratum, and section-cases should be given at once, with ventilation below the brood-chamber, in warm weather, where comb-honey is desired, and surplus cases of shallow frames if extracted honey is the object in view. In all cases we advise the use of excluding honey-boards.

Ekes, or shallow boxes, below the brood-chamber are, perhaps, more successful in preventing swarming than any other method, but over these excluder zinc must not, of course, be used, or the drones, as well as the queen, would be confined to the brood-chamber. If zinc excluder, having slots sufficiently large for the passage of drones, were used between eke and brood, and work in the super had been commenced previously, it is probable that comb-building in the eke would be neglected. American apiarists use this wide-slotted zinc, but we have neither seen nor heard of it in use here.

Surplus Cases should now be on the hives, or in perfect readiness. Let our readers bear in mind that in most parts—if we except the heather districts—surplus storage ceases about the middle of July. In about five weeks, then, the honey-harvest will be all but over, and it behoves bee-keepers, as well as farmers, to make hay while the sun shines. The time is past for dawdling with weak colonies. Such may safely be left to take their chance against another season while all our energies are devoted to the colonies which can give us surplus.

Smoke.—Shall we use it or not? We have for the last two or three years discarded it from our apiary, and we maintain that there is no operation in apiculture which cannot be performed more expeditiously and more effectually by the use of carbolic solution than by smoke. Experience alone can teach the freedom and pleasure one feels in manipulating bees when emancipated from the use of the filthy, spumy bellows smokers.

Carbolic Acid as a Bee-quieter.—Two ounces of Calvert's No. 5 carbolic acid; 2 ounces of glycerine to one quart of warm water, well shaken together, will make a good solution for quieting bees, but it may be used a little stronger by those who prefer it, without injury to the bees, if not to the fingers. We often use the solution without the glycerine, shaking the bottle before using. A coarse piece of canvas cheese-cloth—the size of the top of a frame-hive, or a little larger—to fit various sized hives, neatly hemmed round, and fastened on two small wooden rollers, around one of which it is rolled, is all that is required. The canvas rolled up, and saturated with the solution, is held in one hand upon a side of the hive, and is unrolled across the tops of the frames as quickly as the quilt is withdrawn by the other hand; thus the escape of a single bee is prevented, and if the precaution is taken of brushing a little of the solution over and within the hive entrance, all commotion there is checked. In half a minute (literally) the cloth may be rolled back sufficiently to uncover one frame, when the manipulation may be carried on frame by frame from either side. Under this process the bees retreat from the upper to the lower parts of the combs, and remain quiet under examination, but if they rise to the surface, and show fight, it is enough to recover with the cloth for a few seconds. Cyprians, if roughly handled, will despise carbolic as they do smoke, but quietly treated they are the most peacefully disposed of any bees we handle.

A simple and neat little contrivance has been kindly sent to us by Mr. W. Williams, of Caerleon, Monmouth, consisting of two strips of wood, one of which is grooved, and the other has a tongue fitting into this groove. The sheet of canvas is gripped between the two, and may be rolled upon them, when it can be used as in our own plan between two rollers.

Extracting at this early season we entirely deprecate, since it is impossible that the honey can have been fully ripened. Our own rule is never to extract until the combs are well sealed over. Extracted honey must, of course, be obtained for our early shows, but it should always be super honey, whether stored in frames or sections; and no one would think of removing, and extracting from *unsealed* sections. Why, then, from unsealed combs from the brood chamber, with all their 'pollenine' and 'larvine' flavour and aroma? In combination hives, where excluder-zinc division-boards are used to separate the surplus from the brood-combs, *sealed* surplus should always be considered a *sine qua non*. In large apiaries, where much extracting is carried on, it is inconvenient to have all the work until late in the summer, and no doubt the quantity obtained would be less: therefore outdoor extracting, and from partially sealed combs, is often practised.

Swarms should be moderately fed during the first week after issuing. If good, clean combs are available such may be given to swarms, with alternate whole sheets of foundation between them; but it is well to shave off with a sharp uncapping knife all prominent projections of the cells, in order to give full room to the bees to develop the combs newly built from the foundation, otherwise the new combs will be built with shortened cells, owing to the storage of honey and lengthening of cells in the combs given. Upon swarms thus treated surplus cases may be placed having zinc excluder beneath.

Examination of Swarms to which foundation only has been supplied, should be made every three or four days, and any combs built out of the straight line should be rectified. But this is delicate work owing to the fragile nature of the newly elaborated wax, and the bees must not be excited by smoke or other intimidants, lest the great heat arising from the excitement should cause the combs to collapse entirely. While building their combs bees are usually so amiably disposed that no intimidation is requisite. The mere passing of a carbolised feather over the frame-bars will be quite sufficient to keep them in check while the examination is going on. When in hand the combs must be kept in a vertical position, as the least inclination to the horizontal will cause them to fall out of the frames. A cool evening is the best time to examine, but especial care must be taken in handling the new combs if only partially built out and stored with honey.

When a new swarm is 'set up' on its stand, the hive should be placed quite level, or exactly in a horizontal position, by means of a spirit-level, and then raised one inch at the back, *if the frames range from back to front*; but if from side to side of the hive, this must *never* be done. Here we have one great advantage of the perpendicular over the parallel system, as the former allows all moisture to escape at the entrance, and enables the bees to rid themselves with ease of refuse matter. Hives with parallel frames must perforce stand perfectly horizontal. It is a good plan to confine a swarm, by division-boards, to as many sheets of foundation only as it can well cover, unless the weather prove unusually hot. By these means the combs are built straighter and more quickly, and less rectification is necessary. Room, of course, must be given as required by adding more frames on either side.

Entrances should now be kept at full width in full

colonies, both for the sake of ventilation and freedom of passage for the bees.

TIERING-UP APPLIANCES must also be kept in readiness, in case of a sudden influx of honey, case of sections being inserted under case as required; that is to say, the first case being well forward, or three parts filled. We prefer this plan to the continual removal of sections by driblets as they are sealed over, as causing less disturbance to the bees and less labour to their keepers.

Bacillus depilis is very prevalent we hear, the symptoms of which are the baldness, and bright, black, shiny appearance of the young bees, who are dragged out of the hive and despatched by their elders. Phenolated syrup and change of queen are the only remedies recommended. *Bacillus minor*, too, hangs about in a very unpleasant manner; would that we knew more about both diseases. Our scientists just at present seem to be napping. We want sadly to hear more about the *bacillus* of these scourges, and the way to destroy it.

Selected Queries.

[12.] *How can full sheets of foundation be fixed on sections to prevent sagging? Is it practicable to fix the foundation on all four sides, and so obtain full sections without 'pop-holes?'*

Sagging can be prevented if the foundation is good by fixing it firmly on both sides, and letting it into a saw-cut groove at the top and bottom. No melted wax is required for the purpose. This will not prevent pop-holes unless the bees can readily get from one side of comb to the other by side passages. The bottom corners of sections are best filled if the bee-way is left the whole length from side to side, as in the four-piece sections.—JOHN M. HOOKER.

By melted wax on two sides, or set in grooves on not less than three sides. Shallow grooves, an old experience, has proved worse than useless.—SAM. SIMMINS.

Cut the sheets of foundation rather larger than the inside of section, bend the edges at right angles on three sides, leaving bottom straight— ⌐¯¯¯

providing fresh cases, &c., with me. I have not found iron necessary yet, and wood is certainly more easily worked and warmer, the difficulty with the ⊥ supports is they prevent sections filling and allow propolis to be inserted.—JOHN EDEY.

There is advantage in having a bee-passage between the ends of sections and the case, but between other ends none. I prefer wood supports and separators to metal, but where four bee-way sections are used dividers MUST be of metal.—JOHN H. HOWARD, *Holme, Peterborough.*

Last season was the first time I used the crates with bee-ways round (if I may term it) the outsides of the sections, and I do not consider it any advantage as far as the filling of sections, and it has the disadvantage of forming a retreat for bees to run into instead of down into the hive when taking off crates of sections. I myself prefer the wood supports for sections, and the dividers rest on feet on the ends of dividers only.—W. WOODLEY.

1. Yes; the passages (¼-inch) admit of a free communication to all parts of the super and 'popholes' are not likely to be left in the sections. 2. Metal supports are preferable to wood, but they should be of tinned iron, *not zinc.*—ROLAND GREEN.

There is no advantage in having bee-passages between ends of sections and case and between rows of sections, especially where the four bee-way sections are used. I prefer the wood supports for sections in case, simply because they are cheaper. These supports are usually too broad, half an inch for centre supports and three-sixteenths for side supports is ample.—WILLAM MCNALLY, *Glenluce, Scotland.*

I donbt if there be any advantage, as the bees have plenty of room over top and bottom of sections when cases are tiered up; but if used, should certainly not be more than quarter of an inch. It matters little which it is, as long as the right distance is kept. If metal it should be strong enough to prevent bending.—WM. N. GRIFFIN.

I have had no experience with the first part of this question, but for the latter I use wood supports for sections and separators.—JOHN WALTON, *Honey Cott, Weston, Leamington.*

1. I have not found any advantage in having bee-passages between the ends of sections and the case, or between the ends of sections where four bee-way sections are used. 2. I prefer the use of wood supports for sections and separators.—H. WOOD.

I have failed to find any, though running them side by side. I use both with equal facility.—W. B. WEBSTER.

I have never tried it, but should think the loss of heat would not compensate for any advantage. Making my own section racks, I use wood: the only one I ever bought had metal ones, which bent under the weight of filled sections.—W. E. BURKITT.

Yes, decidedly, if perfectly built, sections are an object. I think metal supports are less propolised than wooden ones, but there is little difference, and I use both.—GEORGE RAYNOR.

CRAVEN DISTRICT BEE-KEEPERS' ASSOCIATION.

At the monthly meeting of this Association, held at Skipton on Saturday, the 5th ult., a valuable paper on 'The Medicinal Properties of Honey' was read by Mr. R. A. H. Grimshaw, Hon. Secretary of the Yorkshire Bee-keepers' Association (see next column).

On the proposition of Mr. Dodgson, seconded by Mr. W. S. Thornton, a cordial vote of thanks was given to Mr. Grimshaw. In the absence of the President (the Rev. E. Kemble), the chair was occupied by Mr. Carter.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Reviews, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to Mr. J. HUCKLE, Kings Langley, Herts (see 2nd page of Advertisements.)

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

RE-FORMATION OF THE LATE LINCOLNSHIRE B. K. A.

[1667.] The Hon. Secretary of the Boston Branch of the above Association, Dr. Small, and myself are anxious to save the members of this branch from being drawn into the 'vortex,' caused by the drowning of the Lincolnshire B. K. A. There are about thirty subscribers, the greater part of whom pay regularly, headed by the vicar of Boston with 10s.; and they would pay this year if you and the committee of the B. B. K. A. can devise any means to save us from the fate that awaits us. If so please act promptly.—ROBERT THORPE, *Swineshead, June 2nd.*

[We are pleased to hear of the prospect of the re-establishment of so prominent an Association as the Lincolnshire. Will the B. B. K. A. promptly give the helping hand that our correspondent requires?—ED.]

THE MEDICINAL PROPERTIES OF HONEY.

[1668.] We should like to inquire into the reasons why or in what respect honey is a medicine, supposing we take it as admitted that such is the case, an assumption many medical men might object to, seeing that the position of honey in the British Pharmacopœia is such a very modest one, its use being chiefly that of a vehicle for other medicines, and as an adjunct to gargles. I should say that children in the stages requiring *Mel boracis* receive the greatest share of the officinal preparations of honey. True, oxymel (a mixture of honey, acetic acid, and water) is used as a demulcent, softening mucus lodging in the air-passages and facilitating its expectoration. In my own household, however, I prefer the use of citric acid to acetic. In bronchitis, honey pure and simple is always at hand, and more relief is obtained by frequently tasting it than from anything else. Nearly twenty years ago I found the greatest benefit in an attack of quinsy by using a gargle of red sage, acidulated with vinegar, and well sweetened with honey. Honey *ad libitum* as a laxative, and mixed with borax for thrush, is, of course, a common household medicine for children. We will leave out of our view the value of honey as a food, as a heat-producer, consisting, as it does principally, of carbon and water, the two sugars dextrose and levulose, invert sugar. We know it is readily assimilated in the stomach, and should be eaten with some attenuating substance such as bread.

Mr. Cheshire, in 'Honey as Food,' tells us:—'Why honey has a curative effect it is difficult to say for certain, but one may theorise, and ascribe this fact to the readiness with which it combines with mucous tissue. Honey is variable, and therefore its value as a medicine cannot always be the same.'

In 'Honey, as Food and Medicine,' we have a list of prescriptions which are almost incredulously efficacious, a few of which may be named as startlers:—Inflammation and congestion of the lungs followed by unconsciousness were cured by eating honey at all times of the day and night until 10 lbs. were consumed. Herr Karl

Gatter was at the verge of the grave, and was restored to perfect health by the use of honey. Consumption is cured by it, and in ancient times it was used as a means of securing long life, and it is said to be an excellent remedy in diseases of the bladder and kidneys. The recipes are:—For asthma, honey of squills, honey cough syrup, eye-wash, balsam of honey, for croup, for bronchitis, honey salve, for coughs, colds, whooping cough, &c., honey-wash for the eyes, gargle for sore throat, cancer plaster, honey cough medicine, honey and tar cough candy, honey for sore eyes, honey and walnut cough candy, remedy for whooping cough, colds, &c.

Granting that all these prescriptions are good and effectual, what is there about honey that is absent in sugar which brings about such apparently wonderful results? It is in this direction we will turn our gaze. We know the effect produced upon the nerves at the roots of our teeth by bringing them into contact with fresh honey, strong in acid, and it may be that the excess of formic acid secreted by the bee is used by it in giving its honey this strong acid reaction. Indeed, it is not beyond the bounds of reason to suppose that the supply of this acid to the bee is not intended for use so much as sting poison as for purely domestic purposes. There is not much doubt that the acid contained in honey is beneficial to both stomach and liver. What else is there in honey? Well, myriads of pollen-grains, and these contain chemical principles of undoubted medical potency. Putting aside the husks (the extine and intine of the pollen-grain) the outermost skin is found to be reticulated with ridges, the seat of a secretion of sticky oil. The contents are a sticky fluid rich in protoplasm, sometimes transparent, sometimes opaque, by reason of floating granules (fovilla), which granules are declared by Herapath to contain as much as 46 per cent of a peculiar inflammable *azotized* (?) principle insoluble in nearly every liquid. I imagine it is soluble by gastric juice. These granules were found to be invisible in many fresh pollens, since the fluid in which they swim has the same refractive power as the granules; some of them are drops of oil, whilst others consist of proteine compounds. Many pollen tubes will develop in nectar, by osmose of water, and produce in their own tubes other chemical combinations, and as the growth of these tubes often exceeds the diameter of the pollen grain by a hundred diameters, their chemical position in the honey must be somewhat considerable. We have then (leaving the sugar of honey on one side) to deal with formic acid and the protoplasmic contents of pollen-cells, when we think of honey as a medicine. The most important factor, in my opinion, remains yet to be considered. I allude to its flavour. Mr. Otto Hehner tells us 'he has not been able by chemical means to distinguish between honey from one kind of flower and any other.' We must all admit that such a difference exists. We know that honey collected from poisonous plants is materially affected by the active deleterious or objectionable or medicinal principle, secreted by such plant, the rhododendron family, azaleas and kalmias being an instance of this. Does it not follow, as nectar is a secretion and an exudation of the plant cell, that it is charged and pervaded by the active principle, beneficial or otherwise, of the plant? Many instances of the identity of the nectar flavour, and the distinguishing principle of the plant which secretes it, can be given:—

Citric acid is found in fruits and flowers of the orange tribe.
Tartaric ,, ,, grape juice.
Malic ,, ,, the apple, gooseberry, &c.
Tannic ,, ,, the oak, &c.
Hydrocyanic (prussic) the cherry laurel.
Oxalic acid ,, sorrel and rhubarb.
Gallic ,, ,, in all kinds of galls.

Of poisonous principles we find alkaloids of—
Quinine in cinchona.
Morphine ,, opium.
Solanine in plants of the potato tribe.
Veratrine ,, sebadilla.
Aconitine ,, monkshood and aconites.
Strychnine ,, nux vomica.
Atropine ,, belladonna.
Piperine ,, pepper.
Theine or caffeine in tea and coffee.

Some of the most poisonous plants bear the gaudiest flowers, and such we know are peculiarly attractive to bees, whilst many plants unwholesome as food are invaluable as medicine. Most of the umbelliferæ are poisonous, the same may be said of the ranunculaceæ, *e.g.*, anemone, pulsatilla, delphinium, monkshood, aconitum vulgare. The poppy family, papaveraceæ, are notorious (P. somniferum). The crucifers are, however, non-poisonous. When we come to the violet family we find one of our most valuable medicines (ipecacuanha), obtained from the root of a violet grown in Peru. The buckthorn (rhamnus) gives us a valuable medicinal fruit: from the spindle tree family we get the valuable active principle euonymine. The seeds of the laburnum are poisonous. The cherry tribe (containing the almond, peach, nectarine, &c.) yields us prussic acid, this acid is also secreted by plants of the plum tribe. A common plant (fool's parsley), common in gardens, is poisonous, as are generally the umbelliferæ, wet places being their home as a rule, when this principle is developed. Wild lettuce and wild celery are poisonous, whilst most members of the compositæ are medicinal. It is curious also to note that the ling or heather (the source of so much fine honey), has in its family the azaleas, kalmias, &c. The periwinkle (vinca) family have amongst them the nux vomica, from which we extract strychnine, a deadly poison, but at the same time the most valuable tonic in the Pharmacopeia.

Entire plants are wild lettuce (Lactucin, similar to Manna).

The following are the parts of plants used in medical preparation:—

Twigs and Tops	Savin	(Savin oil.
	Broom tops	(Scoparin).
	Woody nightshade	(Solania, an alkaloid).
	From	*Is obtained*
Flowers	The Lavender	Oil of lavender.
	The Hop	Lupulin and Humulin.
	Peppermint	A volatile oil.
	Camomile	A volatile oil (Oleum Anthemidis).
	Orange Flowers	,,
	Crocus	Saffron.
	Rosemary	A volatile oil.
	The poppy	,,
	Elder	,,
Buds	Santonica (worm-seed)	Santonin, and a volatile oil.
Barks	Larch	Resin, Tannic acid and Larixinic acid, crystal and volatile.
	Mezereon	A volatile oil.
	Oak	Tannic acid.
	Elm	,,
Leaves	Monkshood	Aconitia (A).
	Deadly nightshade	Atropia (A).
	Hemlock	Conia (A), and a volatile oil
	Foxglove	Digitalin (A).
	Henbane	Hyoscyamia (A).
	Cherry laurel	Prussic acid and a volatile oil.
	Stramony leaves	Daturia (A).
	Bearberry	Tannic, gallic acids, and volatile oil.
Roots	Monkshood	Aconitia (see Leaves also).
	Deadly nightshade	Atropia (,, ,,)
	Colchicum	Colchicia (A).
	Gentians	Gentianite, a bitter principle.
	Dandelion	A bitter crystalline substance Taraxacin.

Fruits	Dill	Volatile oil.
	Anise	,,
	Carraway	,,
	Coriander.....	,,
	Fennel	,,
	Hemlock	Conia (A) see Leaves.
	Poppy	Opium from which Morphia.
Seeds.....	Colchicum	Colchicia (A) see Roots.
	Mustard	Myronic acid and a volatile oil.
	Stramony.....	Daturia (A) see Leaves.

When we come to examine these products of the plant, from its very summit to its roots, taking leaves, bark, flowers, fruit, seeds, on the way, we find what we may call the characteristic or active principle of the plant pervading its whole system, but appearing in a stronger form in some particular place. We must try to think of the plant as a simple aggregation of units, a mass of single cells, each of which is a laboratory in itself, forming of itself simple and complex compounds which it passes forward to its neighbours in order that they may be thereby further perfected, and finally stored away for future use by the plant or utilised by it as protective, resisting the attacks of birds, insects, and other animals, or else rendering the plant attractive to the particular animal whose services are desired. Now the aroma of the plant is generally characteristic of its active principle, and this aroma appears in the nectar. The nectar owes its saccharine matter to the starch secreted by the single plant-cell from the carbonic acid of the atmosphere which it transforms into sugar and flavours with its active principle. The sweet-scented sap exudes or transudes through the outermost cells and appears as a degradation product in a similar fashion to resins and gums.

We find most active principles medicinal when taken in small doses, but distinctly poisonous in larger quantities; and again many of them are antidotal when taken together. Herein is a beautiful provision of nature exemplified in the minute quantities of medicinal matter gathered by the bee, and so mixed in its storehouse that strong doses are rendered almost impossible and innocuous. The human system, however, when out of order (and it rarely, if ever, is in perfect health) has the faculty of sympathetically seizing hold of what it requires from the food to restore it to its normal state. Honey thus supplies us with numerous powerful agents in restoring to health disordered vital functions. I hold that the mixed honey, for these very reasons, is the healthiest and best for general use; that which bears distinct and pronounced flavour, at once betraying its origin, only so betrays it because it holds an undue proportion of the active principle of the plant whence gathered, be this beneficial or otherwise; and when honey is found to disagree with any one, it will probably be found to be honey of a distinct flavour.

We also lose sight of the fact when eating section honey that we swallow the waxen cell-wall which we are told is varnished over with a preparation (a sort of furniture polish) of the acid saliva of the bee and propolis—propolis consisting of powerfully medicinal exudations varying with the sources from which it is is gathered. Much that I have said is ideal and theoretical, but I think my conclusions are rational and practical, viz.,—that in dealing with honey we are dealing with a medium—nectar—flavoured with powerful medical compounds whose harmlessness is ensured by the wonderful antidotal mixing of the bee, but the beneficial properties are still present, ready to be seized upon by diseased or disordered organs, and if there be anything in the science of homœopathic medicine, the curing of disease by minute infinitesimal doses of such powerful drugs as produce *symptoms* of the disease in larger doses, then a new line of thought is opened up and considerable support given to my hypothesis.—R. A. H. Grimshaw, *Horsforth, Leeds.*

NOTES ON BEE-HIVES.—SECTIONS.

[1669.] Notwithstanding my remark in the last communication under the above heading, I have had such a vast number of letters asking for various kinds of information *re* my glass sections, that I am compelled to say that I find it quite impossible to answer all, owing to a lack of time just at present. I have also to say I hav no price lists or catalogues, nor am I interested in any way for or against any manufacturer. What I have made are for my own private use, and I cannot undertake to transmit specimens or samples in consequence to any one. Kindly permit me again to say they may be purchased when advertised in the *British Bee Journal*, unless they can be obtained in any other way.

Perhaps some receipts for polishing the edges of slips of glass would be useful at present if this would not be injurious to any person's trade. Will some friends send one or two methods? I acknowledge with many thanks the unexpected kind present of a beautiful patent glass-cutter, fixed in a penknife, from a house in Sheffield. Fancy, we can now make our sections with our penknives!

I have seen a remark somewhere that foundation is apt to fall down when placed in a section with a groove on all the four inner faces unless it is fastened at the top. I have lately received ten pounds of Dadant's extra thin foundation, and have, during the past month, given this matter a very careful test, and find the groove on all the four inner faces is all-sufficient. I find the sample of Pelham foundation for sectional honey Mr. John H. Howard sent me to try answers equally well, but I am making experiments upon the different sorts of mid-ribs manufactured to see how this affects the capping, and I wish others to do so and report. Will Mr. Howard kindly give particulars of the sections or crates he talked about some time ago with reference to the moon or the man in the moon? We shall be pleased to hear full information also regarding the section with a groove on all the inner faces to hold full sheets of foundation.—T. Bonner-Chambers, F.L.S., *Tref Eglwys, Caersws, Montgomeryshire, June 1st.*

COMB HONEY.

The Best Methods for Obtaining a Good Article.

[1670.] As the time is at hand for obtaining comb-honey, a word about the methods to be employed may not be amiss.

No doubt shallow frames without comb tend to drive the bees into the sections; but, at the same time, the queen must be suppressed in her duty, namely, to keep the colony supplied with brood; for where there are ample vacant cells, the queen is sure to increase even beyond one's expectations. I believe that I first gave the origin of my own plan a number of years ago, which is in full harmony with the instincts of the bees.

As the queen will only use comb $\frac{3}{8}$ of an inch thick, it must be shaved down to that depth. Now where there is much honey in the comb, it is to be extracted. But the combs must not be left, as it generally is, say, $\frac{5}{8}$ of an inch or so apart. They are to be closed up to at least $\frac{3}{8}$ of an inch, and by using strips of wood $\frac{3}{8} \times \frac{7}{8}$, with a large-headed tack driven in the edge $\frac{1}{4}$ of an inch from the top (the strip is half the length of the end-bar to the frame); these are now hung on the tin rest, and the frames crowded against them, one at each end of the frame next the side of the hive, and so on. At last they are hung between the division-board and the last frame, and all crowded up close. Thus the frames are all spaced alike, and we can move the hives, and yet all is secure. Thus close, the bees cannot bulge much of the comb, and the queen is sure to use the natural thickness,

which she has plenty of, and the bees are glad to enter the sections.

I am sure, too, that we need less comb in this way, and yet we are sure of more brood. I get nine frames into a hive only 11¾ in. wide. With even this number the bees will work in the sections far better than in the old way, when crowded down on five or six combs, spaced away apart by bulged and thick comb. Such was sure to cause swarming, as instinct plainly teaches the bees that they must soon be unknown if no brood-room is provided; and how often we have found but little brood where there should have been an abundance, and yet the cause never occurred to us. This shaving and narrow spacing also prevent storing of pollen in the sections to a great extent, simply for the reason that there is plenty of room right among the brood, where it should be. Where one has a large number of colonies, there is a great saving in the comb, which is quite an item.

Of course for winter the combs are spread, and a 'stay' like the above only ⅜ of an inch would please any one when he comes to move the hives into and out of the cellar, as they are simple and cheap, and remain nicely in place. Try it.

After trying about every method, I have proved the above plan to be *the one*. Also that it pays to use full sheets of foundation in sections, and to cover the boxes up warmly, and then rest assured if there is honey in the field, it will be carried into the sections.—F. P. Churchill, *Hallowell, Me.* (*Eastern Farmer.*)

POLLEN AND BEE-BREAD.

[1671.] We frequently hear bee-keepers discuss the question, 'Do the pellets of bees consist of various kinds of pollen, or only of the same kind?' In other words, 'Does each bee when gathering pollen visit only one species of flower or several?' and, further, Is bee-bread a mixture of all kinds of pollen, or is it not?

The only way to make this matter clear is by a reference to the microscope, in the manipulation of which Professor Schröter of the botanical section of the Polytechnic Institution of Zurich very kindly assisted me. Our material for operating upon we obtained from five bees from different hives, which, on their return to the hive, were captured just as they were on the point of entering. These bees were deprived of their two pellets, and then set free again. Each pair of pellets was kept quite distinct and examined separately. The result was uniform, showing 'that bees visit one species of flowers during each excursion,' and that this rule holds good even if a few grains of pollen of a different kind should happen to be found in the pellet. The case is quite different with bee-bread, which consists of a confused irregular mixture of various kinds of pollen. The shape and colour of pollen-grains are exceedingly characteristic. Various portions of the pellets were placed in the field of vision of the microscope, and the pollen grains which had got accidentally mixed with the main portion were counted by us. In this way we obtained the following results: Pellets of bee No 1.—Colour, splendid orange red. 91·80 per cent of the predominating kind of pollen, 1·80 per cent of a second kind, 1·20 per cent of a third kind, 0·90 per cent of a fourth kind, 4·30 per cent of a fifth kind. Pellets of bee No. 2.—Colour likewise splendid orange red. Results, same as No. 1, the predominating pollen, however, showing a still higher percentage. Pellets of bee No. 3.—Colour, red brown. Very large grains with tubes. 86·5 per cent of the predominating kind, 13·5 per cent smaller grains of different shape. Pellets of bee No. 4.—Colour, pure yellow, like sulphur; very clean specimen. 98 per cent of the predominating kind of pollen, 2 per cent of the other. Pellets of bee No. 5.—Exactly like No. 4. 98 per cent of the predominating kind, 2 per cent of the other. We did not trouble to find out what flowers the pollen had been obtained from, as the question did not directly concern us.

From the foregoing it will be seen that the pellets were evidently in each case obtained from one species of flowers only, the small per-centage of the other pollen-grains having become added in different ways. Thus, for example, pollen-grains from flowers which are fertilised by the wind may have been blown upon the anthers of species visited by bees, or may have been brought by other insects which do not always confine their visits to one species, or the bee may perhaps have collected honey from one or several other species of flowers after it had gathered its load of pollen, when pollen from them might accidentally have adhered to its pellets; or, lastly, it is probable that in the rush of bees to the entrance, all anxious to get into the hive, one bee may have rubbed against pellets of its neighbour, and thus cause some of the pollen to adhere to its owner. We can easily understand that a bee should only visit one species of flowers during each excursion, for it would find it most troublesome and tedious work having continually to alter the mechanism of its collecting organs so as to be able to extend its visits to flowers of different species, and to adapt it every time to the objects of its visit. Such, however, would infallibly have to be done if the bees did not continue their visits to the species of flower during each excursion.

This interesting fact, which, as regards division of labour, places the bee most deservedly by the side of man, carrying on his technical labour of a higher kind, will, however, hardly surprise us, seeing that this little insect shows so much system and saving of time in all its doings.

Bees are said to proceed quite similarly in collecting honey, and this, indeed, is more than probable, looking at the most highly complicated and frequently scarcely accessible nectaries of honey-yielding plants. We therefore, very properly distinguish between acacia honey, cherry honey, honey from the dandelion, bears'-foot, buckwheat, &c.

With regard to the pollen, or bee-bread, I may remark as follows:—If the contents of old bee-bread combs be carefully removed from each cell separately in one piece, by means of a pointed awl, a number of small hexagonal prisms are obtained, the different colour of the layers of which very plainly shows the mixed nature of the pollen. Further confirmation of the pollen being very much mixed was furnished by microscopic examination. Bee-bread cells, as we know, are filled by those bees which attend to the domestic duties in the hives; they take from the bees returning laden from their excursions the pollen they have brought home, moisten it afresh with honey and saliva, and then press it in with their head firmly into the cells. Under the influence of the fermentation in the pollen, as well as that of the saliva, those important processes of conversion of the albumen in the pepstones, and of the amylocoris bodies into sugar, take place, which greatly facilitate the preparation of food for the brood later on, of which I have already spoken elsewhere.—Dr. A. von Planta.

AFTER THE WINTER. (1658.)

[1672.] I had a hive perish this winter in the same way as described by 'Brathay' in your issue of 31st ult. I explained the case to you, and you suggested that winter passages had not been cut (see p. 147) whereas that had been done. I am inclined to think that a faulty cover, made of inferior 'sappy' wood, was the primary cause of the bees 'working forwards' when the wet came through. This may have been the case with 'Brathay's' hives.—C. A. J.

QUEEN-REARING.

How to Rear Good Queens.

[1673.] To the beginner who would like to rear a few good queens for his own use, I offer the following method of securing them :—

Select the best colony, and if there is little or no honey coming in from the flowers, feed this colony every evening, a little more than the bees will consume during the following twenty-four hours. Continue the feeding for a week, or until the colony is in a thrifty condition; then, on any afternoon, remove the queen.

On the fourth day after removing the queen, open the hive and examine the combs carefully; if there are cells sealed, open them and examine the larva. Do not molest those not sealed. Replace the combs, and on the twelfth day from that on which the queen was removed, open the hive and cut out all the queen-cells but one, and put them where they are needed. Be sure to continue the feeding until the cells have been taken out. If you stop feeding, and there is no honey coming from the flowers, the bees are liable to destroy all the cells except two or three.

In the above way the queens will all be reared from eggs or larvæ less than twenty-four hours old, and the food from the cell from which the larvæ were removed can be given to the larvæ not yet sealed. This plan will produce good queens, and is much safer and more economical for the beginner than to purchase queens and take the risk of introducing them.—S. A. Shuck, *Liverpool, Ills.*

Echoes from the Hives.

North Leicestershire, June 4.—With the exception of two or three windy days at the beginning of last week, the weather has been continuously favourable for the bees. Stocks are daily strengthening, drones are on the wing, and supers already in request. The first swarm in this neighbourhood came off at Eaton, on the 24th ult.—E. B.

Wrexham, June 4.—Splendid weather in Wales now, what we have been wanting a long time. Bees have been taking great advantage of these last few fine days, rushing off to the woods and mountains where there are blossoms of any kind. The apple-blossom has come in for a fair amount of calling from the bees this spring, as there was scarcely anything else; there have been no spring flowers. But I am glad to say things look very hopeful for a good honey-harvest. I have only heard of one swarm yet. I hope to be able to give you a good report in a week or two.—J. D. W.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

R. R. R.—*Wax-moth.*—From your description, there is little doubt that the hive is infested with the wax-moths. They must be promptly destroyed, either by crushing them when crawling, or by pricking them out by the aid of a penknife. If hives are kept strong, and have a prolific queen, the moth need be little feared, as it would have but a slight chance of effecting an entrance. Care should be taken not to leave old combs about, or permit them to remain in empty hives where moths can enter. Such combs should be melted, or they will become a nursery for the moths.

F. H. B.—*Excluder-zinc.*—The round hole excluder-zinc forwarded may answer your purpose, but zinc with oblong holes ($\frac{3}{16} \times \frac{3}{16}$) is preferred by bee-keepers. Let the piece be the size of the bottom of the glass.

New Beginner.—Inquiries respecting the Notts B.K.A., should be addressed to Mr. F. K. H. Fisher, Farnsfield, Southwell.

A Perthshire Amateur.—*Cells with a number of eggs in.*—This is nothing unusual, where the number of bees in a hive are not sufficient to cover the space of cells required by the prolificness of the queen. The queen must be a good one.

John Chilton.—1. *Hive with twelve Frames.*—Ten frames are quite sufficient for the requirements of ordinary queens. 2. *Transferring.*—This should be done by a novice three weeks after swarming.

Rev. F. W. Pudsey.—1. *Dead Queen.* The queen may have died or been superseded. Where brood is in the hive in various stages, although queenless, the bees will carry in pollen. The bees no doubt have raised another queen; as there are plenty of drones about, now she will most likely get fecundated. 2. *'White' Bee.*—This was an immature one.

Beeswing.—1. *Spacing of Frames.*—If full sheets of foundation are used place them $1\frac{1}{2}$ inches apart. 2. *Drones cast out.*—This not infrequently happens at the beginning of the season where supplies are below the requirements of the colony.

Felix.—*Old Foundation.*—Place the foundation referred to in water at the temperature of new-drawn milk, leave it in for say five or ten minutes, keeping it covered up to retain the warmth, fix in sections, and put on the hives at once.

X. Y. Z.—1. *Keeping Queen laying.*—You must, under the circumstances, leave the bees to arrange this matter. 2. *Proportion of Pollen carried.*—Bees have the instinct to collect pollen when abundant for future use. We should say you are hardly likely to find any considerable excess in any particular hive. If you do, give a comb to some weak, slow-breeding colony, it will help them considerably, more especially if such comb contains a fair quantity of hatching brood. You cannot control the quantity of pollen carried.

M. Cowen.—1. *Spring Dwindling.*—It is quite possible in a trying season like this for bees to dwindle very fast, but we should think hardly so much in the time. Are you sure they have neither been robbed nor yet swarmed out? 2. *Drones thrown out.*—Generally a sign that stores are getting short. In your case they may have decided not to swarm owing to your timely attention. We have had a similar experience.

W. C. Alexander.—*Bees damaged in Transit.*—The seller promised to *properly pack and place on railway.* Are you satisfied this was done? From your account we should think he did pack them properly. If you are satisfied they were properly packed, then we consider you can hold the company liable. Had they not been prepared to convey according to instructions on label, they should not have accepted them. We have no doubt they charged an extra rate to cover extra risk and trouble. We wish you success, and shall be glad to hear the result if not troubling you too much.

O. Dobree.—*Combs with Syrup.*—If not granulated this can be removed by the extractor. We should give them to weak stocks after uncapping a portion, then uncap some more in three or four days. You will soon find them cleared out.

C. Moone.—*Supers.*—Make a strong swarm as you suggest, put only inch starters in the frames, place excluder zinc three-eighth inch above frames, put at least one sheet foundation in each glass, and you should succeed. Carry this out while there is a honey flow on. For this purpose we should prefer blacks, their

comb is much the whitest. Keep the glasses well wrapped up to prevent a chill.

A Lady Puzzled.—*Robbing.*—Your letter records a sad effect of robbing. The probability is that when your gardener fed the bees some syrup was left about, which excited the cupidity of the bees of the neighbourhood. When robbing is once commenced, it is difficult to put a stop to it. Whilst feeding is in progress the utmost care is necessary. Colonies should be fed at night, with the entrances narrowed; if excitement prevail, carbolic solution may be freely used. We trust, however, that with your splendid location you will not be disheartened, but try again with a greater degree of purchased experience, and we hope success may crown your efforts.

H. S. H.—The parasite on your bees is the *Braula cæca*. With the growing admixture of foreign bees, we are afraid that this parasite is getting more common in this country than it was at one time.

C. A. J.—1. *Bees.*—The bees are diminutive black bees, most probably reared in old cells. 2. *Salicylic Acid.*—Your experience is sustained by that of many bee-keepers.

I. M. B.—*Destroying Queen Cells.*—We have no doubt that the continued destruction of queen-cells in the same hive does hinder the work done in that hive, because the attention given to the successive queen-grubs would if bestowed on worker brood have raised a considerable quantity of bees. Sometimes bees are persistent in raising a queen. In that case we should remove the old queen, place her in a nucleus against the stock, let the stock raise a queen, and, to satisfy their craving when the new queen is laying, the nucleus can be united to the old hive, the old queen being destroyed, or introduced elsewhere as may be desired.

O. W.—*Water for Bees.*—We always have a good supply of water about for our bees, and it is a treat to see them busy at it by the hundred. Strew cork-dust on the water, it is the best preventive of drowning. With our present appliances supers *must* be removed when it is necessary to feed. Enamel cloth over supers would prevent the evaporation necessary to ripen honey. We should not recommend pouring water into the hive entrances, try a wet sponge on the frames.

The Rev. W. E. Burkitt would be pleased to receive information as to whether there is a French Bee-keepers' Association at Dunkirk, or any leading bee-keeper in that neighbourhood.

We have received from Mr. E. McNally several samples of section-holders, which will prove very useful for handing over single sections of honey to purchasers. Mr. McNally, knowing the necessity of having these got up in a popular form, is enabled to produce them at a cheap rate, and yet they will be found good enough for any exhibition. One that is labelled No. 6 is very tasty and chaste, and its appearance would prove a great means of securing buyers. It would be desirable to have on all these section-holders a label setting forth the value of honey for food and medicine.

Business Directory.

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Editorial, Notices, &c.

AN AFTERNOON OFF.

'If haply thou see'st in thy travels
Some rare noteworthy object,
I pray thee, make me partaker of thy happiness.'

Where could a bee-keeper wish to make a more pleasant visit than to a hive-factory fixed in a picturesque locality, where also a large apiary is worked? He can thus see for himself all the most recent improvements in hives and appliances, see the things actually made under his own eyes, admire the simple machinery turning out so accurately work he hitherto thought required mechanism so intricate; and when he is tired of this, a turn in a bee-garden is doubly refreshing. Such were a few of my thoughts a couple of Saturdays ago, when I paid a visit to the works of Mr. T. B. Blow, at Welwyn, accompanied by 'the Sage,' 'my guide, philosopher, and friend.' We were not long together in the train, speeding from London, ere I was informed that we were to have the pleasure of 'Amateur Expert's' company at Welwyn, this gentleman having signified his intention to drive over and join us—I won't say where from, but as his steed was to all appearance a thoroughbred of Eastern, if not of Arabian origin, capable of 'going anywhere and doing anything,' he had evidently been able to travel some distance to do us honour, and I was touched at this consideration on his part.

In the absence of Mr. Blow, his manager, Mr. Buller, met us at the railway station, and he soon took us round to A.E., whose high mettled barb seemed to have a way of its own and couldn't be left with safety. A country lane took us in about a mile into Welwyn town, when we were soon all four, not at sixes and sevens, but at all fours amongst hives, frames, sections, and what not. Machines there were on all sides, hard at work (overtime) planing frame-ends, shearing and stamping zinc for separators, shearing and stamping patent section boxes; saws slicing into sections and top bars the well-known saw-cut, such a heartrending, temper-trying ordeal when attempted by hand; casting metal-ends, &c., the boast being that only British machinery is used throughout the factory. I do not, however, take too much notice of that, seeing we are indebted to America and elsewhere for many mechanical notions.

In one nice warm room (over an upright boiler, by the way, so as to be 'nice and ready,' I suppose, for the journey should the end come out) were men busy with wet knives cutting with clean edges super foundation, as busy as Cyprian workers trying to get ahead (in cell-building) of the queen (in egg-laying). I was shown an empty foundation store which was quite full quite recently.

At this point an agreeable interruption took place by the visit of Mr. Dixon of Great Ayton, a well-known North Yorkshire bee-keeper; and it was somewhat amusing when he made 'X-Tractor' guess who he was, a feat accomplished in two tries, the only given clue being that we had 'corresponded.' Need it be said we were soon all friends together? Mr. Dixon, who is proud of his pure brown bees, and thinks the rage for foreign races misplaced, was rather sceptical of the superior docility of the Carniolans for which Mr. Blow is noted; but when he saw Mr. Buller open a strong stock after only two whiffs from a cigarette, without allowing any time to gorge, he was forced to admit that the native bee would have resented such handling as they received; this idea was confirmed when a strong skep was turned up. The saying that Carniolans are harmless as flies seems to be no exaggerated *façon de parler*.

There was nothing remarkable about the home apiary beyond what is to be found in all well-managed bee-gardens. It is picturesquely situated amongst sheltering trees (too tall for my liking at swarming time), and on one side is a fine willow copse, of course providing an early spring feeding ground; on the eastern boundary runs a clear and gently flowing stream rich with purifying aquatic plants, and (what is best, oh, disciples of Izaak Walton) plentifully stocked with trout, many of which, huge things for a stream, we plainly saw lazily looking out, head up-stream, for good luck. To my unpractised eyes these fishes were difficult to discern, so marvellously has Nature arranged the colours of the body to resemble the bottom of the brook and the surroundings. Mr. Buller told us that in the overhanging trees as many as seventy different species of birds had been noted in one season. This leads me here to remark that he is a skilled taxidermist and ornithologist to boot, for he showed us a room full of stuffed birds preserved by his own hands in the most natural and tasteful way it has ever been 'X-Tractor's' good fortune to see. One case of specimens, which I will entitle 'Mors janua vitæ,' was a chain of life and death, representing denizens of earth, air, and water, in the act of capturing the fortunate (and unfortunate) capturer. The 'keeping' of the surroundings of the stuffed specimens proved Mr. Buller a true naturalist.

We next partook of tea with our host, and afterwards accompanied him again into the factory to inspect a quite large collection of medals, well deserved and hard won, which we trust our judges at shows will prevent us in the future from 'lightly esteeming,' for, in conversation we were told some of the difficulties to be gone through in obtaining them—difficulties of transit, want of help, hurry, alterations of show arrangements, and other unforeseen accidents by the way.

One more 'noteworthy object' I must not forget to name—a monument in the adjoining Rectory grounds, erected in the memory of Dr. Young, sometime pastor of Welwyn, and author of *Night Thoughts*. Night thoughts remind us of the closing day so (as Pepys might say), next to our carriages and so on to the railway station—I nearly said 'to horse'—'Amateur Expert' and 'X-Tractor' in the first vehicle for a quiet friendly 'crack thegither,' 'The Sage,' Mr. Dixon, and Mr. Buller in the second carriage. I am not a nervous subject when driving, but fiery, untamed sons of the desert in the shafts are kittle cattle; and when our prancing steed showed a disposition to shy into passing vehicles, I felt some trepidation which was only allayed by 'A. E.' assuring me it was only one of his little ways and we were quite safe. The station was, however, safely reached, and we were at last compelled to part like the best of friends, after having spent as pleasant an afternoon as a few jovial bee-keepers could well wish—one of those outings we all look upon with regretful pleasure when the leaves of life are beginning to wither away and the memory of the past is one of the chief joys permitted to advancing years.—X-Tractor.

A BEE-MASTER OF A CENTURY AGO.

(*Continued from p.* 282.)

Having shown in a previous paper how many facts in apiculture were known to Bonner, who wrote his book on bee-keeping a hundred years ago, it is only right that we should now point out some of his errors in theory and in practice. And we shall do this both as a warning and an encouragement: as a warning against the dogmatism which so often leads to discomfiture; as an encouragement to searchers after truth to continue intelligent and patient observation, which will certainly be rewarded by the establishment of further facts.

We may smile at certain of the old author's mistakes, and be grateful for the flood of light poured upon the nature, the habits, and the possibilities of bees by modern authors in America, in England, and on the Continent; but we should, at the same time, beware of thinking that the last word has been said on many points of bee-keeping, or that the final touch has been given to both the science and art of apiculture.

Now, without further preamble, we will detail in order some of the curious delusions to be noted in Bonner's book. The first of these is the idea, probably still entertained by many an old-fashioned bee-keeper, and certainly by many other people, that the young queen heads the swarm. He says:—

'In case their hives turn so full of bees and honey, that they cannot get more room to stow honey in, then, rather than be idle, they will rear up a young queen, and send off a colony with her, and so constitute another hive; but after this the mother-hive and her daughters will be as bitter enemies to each other as if they had never seen each other.'

We spoke in our former article of Bonner's contempt for feeding bees, but we hardly expect him to write so strongly as this:—

'Feeding bees is madness, and should never be done in harvest or winter. To set aside weak stocks in harvest is next to throwing money away—with this difference, that throwing money away is only attended with the loss of it, whereas weak hives are lost in winter or spring after a deal of trouble and care about them.'

We wonder what he would have thought of 'driven bees' being set to work to build combs and store them with food for winter so late as August and September. We have many such stocks already so strong and full of stores as to be now indulged with crates and sections.

The next error of our old bee-master is of much greater importance, as it displays ignorance—dogmatic as ignorance is wont to be—of a surprising character. He contends, against a whole array of writers whom he names, that drones are not male bees, that the queen lays only one kind of egg, and 'that the doctrine of all those (almost every writer) that affirm the queen cannot breed without the agency of the drones or males, as they call them, is a mere fancy sprung up in their over-heated brain.' He then proceeds:—'The eggs as deposited by the queen in whatever cell is neither queen, common, or drone, if I may be allowed the expression; but if the common bees think proper, when they find an egg in a common cell, they put in such nutritive matter as they know will make it a common bee; or if they want it to be a queen, they enlarge the cell and put in such nutritive matter as they know will nourish it up to be a queen; or if they find an egg in a drone cell, they put in such matter as will nourish it forward to be a drone. And so it would seem that nutritive matter, together with the kind of cell, is the thing that determines the kind of bee; after which, adding a proper heat, it appears in due time such a bee as they intended it to be. And in this case they have a power above any creature I know, and that is, to make their eggs into any kind of bees they please.'

It is evident that his shrewd and careful observations as to the ability of the bees to provide themselves with queens from worker-eggs led Bonner into this wide and erroneous generalisation. Carried away with astonishment at the just-mentioned notable fact of queen-rearing, and misled by some imperfectly conducted experiments of his own, he landed himself in the gravest difficulties, as we shall at once see. After combating the theory of Debraw, that there are in all hives a special class of 'little drones,' he goes on to say:—'By this time the reader will be very ready, no doubt, to ask me the use of the drones. I beg to be excused on that head, as I have not the least idea of their use in a hive; they do not fecundate the queen, for she can lay and breed too, though she never see them. Their heat does not appear to me to be necessary for hatching the young, as they (the young) are mostly hatched before any (drones) are bred in the hive; and when drones are in the hive the weather is so warm, and so many common bees in it, that they appear to have rather too much heat by their lying out of the hives often.' Again: 'Although I cannot say what use the drones are to a hive (unless it be to help away with a great deal of her honey, which they are very good at), yet the best hives have them soonest in the year.' Had Bonner not overlooked the prime function of the drones—which he actually denies—we, in these later times, would fully sympathise with his difficulty in understanding the need of such large numbers of them in most strong colonies. But we may well smile at the curious mixture of common-sense and fearless dogmatism in the man. A concluding paragraph on the drone question will show clearly how these two qualities blended in him.

'Notwithstanding all that has ever been wrote (*sic*) and said concerning bees, their sexes cannot positively be ascertained as yet by any man; I, for my part, leave it to future inquiries, for it as yet remains a mystery to me. And as to the drones, I know not their use; only this I affirm as fact, that the queen lays all the eggs, and that without the agency of the drones, and also that every egg can be raised up by the commons to be a queen, a common, or a drone, as the commons please.

also affirm there is no such thing as little drones; I am also certain that the queen and commons can perpetuate their species between themselves, which is conclusive they two are male and female, although no writer ever before asserted it.' It might have been as well for the reputation of our good friend if he, too, had refrained from such a statement.

Our most advanced teachers in apiculture would find serious fault with Bonner on the question of entrances to hives. To make these he says: 'Take a little piece of hard wood and cut two small holes on the under-side of it wide enough to let out and in the largest bee, but no more, for, was it much bigger, the mice would go in at it; therefore you must be very exact with your entries, each hole should scarce exceed a quarter of an inch high and as wide.' This is in striking contrast to the recommendations which modern experience has proved to be wise: and we fancy Bonner's bees must often have had a warm time of it in summer, and none too much air in winter. But this latter need he seemed to have occasionally supplied in a way that would rather surprise bee-keepers now, for, he says, after giving directions for securing a stock in comfortable quarters: 'This being carefully done, when the weather is dry in September or October, you need scarcely touch your bees till mid-winter, about which time you may lift every hive and carefully clean their boards with a table-knife of all the rubbish or dead bees that may have gathered on them; at which time you will see what state your hives are in, and in case any of them is reduced to a small quantity of bees you may strengthen them by taking a proper number from any of your hives that is plentiest of them; and if any of your hives be lighter than another, take the bees from her; and in all your uniting of bees strive as much as you can to unite those that are of the best natural tempers, for there is a great odds among them.' This advice seems all very good, except as relates to the mid-winter time of operating. Considering, however, that we are reproached by our American cousins as not having any 'climate' in this country, but only 'samples' of it, and seeing what 'the rigours of our English summer' sometimes are, Bonner may, after all, have been poking sly fun at our weather, and have signified by 'mid-winter' the month of, let us say, March.

We referred, in our former article, and in this, to our old friend's abhorrence of feeding bees, a point on which he holds strong opinions as may be gathered from his concluding paragraph on the chapter devoted to it. He says: 'I am weary of writing on so disagreeable a subject, and hope my wise readers will take advice and keep good stalls in September, and thereby scarcely ever need to seek directions in this chapter called THE BEE-MASTER'S LAST SHIFT.' But those were days in which extractors, driven bees, stimulative spring-feeding, and the building up of weak stocks, were all unknown. We have respect enough for Bonner's good sense to believe that, had he foreseen the coming developments of apiculture, he would have been at one with us in very different views from those we have been quoting from this book.

We will advert to only one more mistake of our writer of a century ago. It is that in the spring 'many of the bees leave the brood, and go in search of farina to seal them up within their cells.' By 'farina,' of course, he means pollen, and we now know that this is gathered for the feeding of the young brood, not for making the cell-covers.

Our object in referring to this ancient writer is not in order to show up his ignorance, and to glorify our more advanced knowledge, but rather to direct the attention of some of our readers to various unsettled points, both practical and theoretical, on which it behoves them to obtain sound information from the best of our modern authorities.

WARWICKSHIRE BEE-KEEPERS' ASSOCIATION.

The annual meeting of the Warwickshire Bee-keepers' Association was held at the Grand Hotel, Birmingham, on the 31st ult., under the presidency of Mr. J. Courtenay Lord. The others present included Messrs. E. M. Pearson, C. Butler, A. Ward, J. Simkins, H. Hobson, J. R. Young, G. Franklin, A. H. Foster, J. N. Bower (Hon. Sec.), J. R. Ingerthorp (Assistant Secretary), and Mr. C. W. Summerskill (expert), &c. Lord Leigh and Mr. Jesse Collings, M.P., wrote apologising for inability to attend.

The annual report of the Committee congratulated the members upon the steadily increasing interest that the Association had been one of the means of creating in the cause of apiculture; but it was a matter of deep regret to them that, owing to the failure of Messrs. Greenway's Bank, and to the general agricultural depression, financially the year had been a somewhat disastrous one. The income from all sources amounted to 92*l.* 14*s.* 9*d.* only, while the expenditure, notwithstanding the observance of the strictest economy, had been 111*l.* 11*s.* 9*d.*, leaving an adverse balance of 18*l.* 17*s.* The Committee therefore earnestly appealed to the members to endeavour to avert the calamity of the useful work of the Association being curtailed, and to further its interests by either increasing their subscriptions or securing new subscribers, thereby clearing off the debt, and giving the Association its full working power. The Association's expert made a tour to members during the spring, but the autumn tour had to be abandoned for want of funds.

The Chairman, in moving the adoption of the report, said the Society deserved the support of every well-meaning citizen, inasmuch as one of its objects was to improve the condition of cottagers and agricultural labourers. He mentioned that the importation of honey from Chili alone during the last five years had amounted to 600 tons per annum, and said that if their Society was to be a success, they ought not to rest until they had reduced the enormous annual importation of honey. Much good had already been done in imparting a knowledge of how honey might be taken in a merciful way. He was sorry to know that the Society had lost 18*l.* by the failure of the Warwick Bank. Many of the members, too, had suffered individually, and had thus been unable to pay their subscriptions.

Mr. Butler seconded the motion, and it was passed.

On the proposition of Mr. J. Simkins, the President and Vice-Presidents were re-elected, and a vote of thanks was accorded to them for their past services.

Thanks were also accorded to the Committee and honorary officers, and Mr. J. N. Bower was re-appointed Hon. Secretary, Mr. J. R. Ingerthorp Assistant Secretary, and Mr. C. W. Summerskill Expert.

Mr. J. Hiam (Redditch) gave a short lecture on 'Bee-keepers' Enemies, and how to deal with them.' He said that one of the greatest enemies of the bee was the hornet, which not only took the honey, but established itself in the bee-hive. The wasp was also an enemy to the bee, the *Vespa germanica* being the most dangerous species. The tom-tit, too, was accused of killing bees, but a piece of suet placed in front of the hive, he found, kept the birds from destroying his bees. Another bee-destroyer was the toad, and even the sparrow and the bullfinch were accused. Last autumn he trapped as many as sixty bullfinches in an ordinary trap-cage, and he dealt with the sparrows by finding them places to build in, and then taking their eggs.

A hearty vote of thanks was accorded to Mr. Hiam at the close of his lecture.

CARNIOLA is the province of Krain, S. Illyria, in the Austrian Empire; it has the repute of producing abundance of honey and bees-wax.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

HONEY IMPORTS.

The total value of honey imported into the United Kingdom during the month of May, 1888, amounted to 2009*l.*—JOHN COURROUX, *Principal, Statistical Office, H. M. Customs, June 6th.*

BEES COLLECTING HONEY—LEE'S PATENT SECTIONS.

[1674.] On page 239 I gave a short account of the condition of my bees at Farnborough, and reported that they were collecting honey and ready for supers on May 5.

On May the 10th I found them working well, and put a case of twenty-one sections on No. 1, which they took to at once. On the 23rd they had worked out and filled most of the sections with honey ready for sealing. As the bees were very strong in numbers I introduced another case of sections between the hive and the first, so as to prevent their being crowded, and if possible to prevent swarming. Before I saw them again the weather had changed, the wind being in the east; on this day there was nothing doing, and the sections, although some were partly sealed, were nearly deserted by the bees. I added some additional covering, but did not otherwise interfere with them.

On Saturday the 2nd of June I found nearly the whole of the upper tier sealed over and took fifteen out of the twenty-one quite finished. The centre row of sections in the lower tier were all worked out and partly sealed, those at the sides not being nearly so forward.

When I saw you on Monday I mentioned that I had some sections nicely filled, and you replied, 'Why did you not bring some up, as I should have liked to have mentioned it in the *Journal*?' I now send you a crate of twelve sections that you may see for yourself if they are not nicely filled. After you have looked at them will you kindly send them on to Messrs. Neighbour in Regent Street, who generally take my early honey? You will see I used some of Lee's patent dovetailed sections, and I am delighted with them; they are far in advance of all others; you will see that the whole twelve are free from popholes or bee-passages. Whole sheets of *Dadant's* thin foundation were used; this I obtained from Messrs. Neighbour, who, I understand, import large quantities of it, and it is in my opinion superior to anything I have seen that has been made in this country, and I believe it to be *absolutely* pure and free from the fatty smell that much of the stuff sold as *pure bees-wax* foundation has; at any rate the bees take to it at once as if it was the genuine thing.

Messrs. Dadant are the largest makers of comb-foundation in the world, and last year I see by their advertisement they made and sold about thirty tons of it. I hope your readers will try it against some other makers, and report to the *Journal* which they prefer. Bad foundation is a most annoying thing to have, as many of us know from experience.

The ease with which full sheets of foundation can be secured in Lee's patent sections, on all four sides, when putting the sections together, is a treat; there is no mess with molten wax or any fear of breaking the section whilst putting together, as is the case with the one-piece sections. They should not be put together without a block, but with it the foundation can be secured to perfection with a very little practice, the chief thing being to cut the foundation to the exact size required.

The principal object of this report is to show that bees, if let alone, with sufficient winter stores, will do equally as well as those that have had the brood spread and been stimulated by artificial feeding, &c.—JOHN M. HOOKER, *June 8th.*

[We desire to thank our correspondent for affording us the opportunity of seeing these sections, to us the first-fruits of the honey-harvest of the season of 1888. We readily bear our testimony to the perfect finish and the beautiful appearance they presented. They were quite free of popholes or bee-passages, and prove that Mr. Lee's dovetailed sections are a great success.—ED.]

QUEENLESS STOCKS IN SPRING.

[1675.] The misquotation of Mr. Edey having given him an opportunity of emphasising that part of his answer would not render an apology necessary, or we would have been glad to have given it. Mr. McNally's answer will be generally regarded as satisfactory.

When the hive has been discovered to be queenless on the first of May, the next thing to do will be to ascertain if drones are forming where wanted; if not, these drone-combs must be placed in the brood-nest of strong hives for the purpose of raising drones. Should the first effort be a success, then in twenty-six days the drone would leave the cell, and in five more would be sufficiently matured to meet the young queen. This will bring us to the close of May. Were the endeavours to raise the young queens equally successful, and so timed that both were ready to fly at the same date, there might possibly intervene some days when the weather would be unsuitable. Suppose for these contingencies the first week in June be allowed, and add to this the three weeks necessary before the brood of the young queen would leave the cell, and three days before they were prepared to work. We would then have come to the end of June, by which time the greatest proportion of the old bees would have died, or have been lost, and only a small portion of young brood could be brought to maturity. The examinations of stocks before the beginning of May are generally not very close, and are chiefly undertaken to find out their supply of food. If in looking down the combs sealed brood is observed, this would be regarded as satisfactory. Without looking very closely to the extent of the sealed brood, we would be disposed to cover up to avoid chilling the brood. The brood in the cells when the hive was discovered to be queenless at the beginning of May, might be very few, though the population of the hive might be strong; under such circumstances, at the end of June, or beginning of July, the stock would be very weak and unfit for honey gathering for that season. This will be regarded as a possible weakness in the system.

The suggestion of Mr. Raynor of wintering nuclei with young breeding queens to join the queenless stocks in early spring, will generally be regarded as a good one. Many thanks for the reply in 'U. H.,' and also to Mr. Walton for the courteous, clear, and practical manner, in which he has described his method of doing it. In both cases we presume the hives were single-walled.

Some few years since, a great amount of writing was going on about several nuclei being kept in one large hive, each having its separate compartment and entrance, with the object of conserving the heat of each for the benefit of the whole. Some of your correspondents would be induced to give this a trial at the time, and could they be induced to make known their success, or

failure, it would be of very great service to some of your readers. For even a failure when the cause is clearly made known is of service to them following with the same end in view, though it may not point out the harbour sought, yet it will mark out a shore, or sand-bank, on which another need not run.—R. M.

SWARM-CATCHING IN IRELAND.—QUEEN-WASPS.

[1676.] Your last *Journal* gave various American methods of catching swarms; allow me to mention two Irish ones which gave amusement here. A policeman came to me in his perplexity how to catch a swarm which had lodged close by on a slender branch of elm quite out of reach. After gazing a while, I said, 'The gun will do it;' and so it did, for with one shot (of No. 5) I severed the branch and the swarm fell unharmed. The other method I adopted with a large swarm was, while I stood on a crate, holding up as high as possible an open umbrella inverted, into which the swarm was safely shaken.

Wasps I have never seen so numerous as this season. To give you some idea of their numbers, I find by my record that in '85 I killed 102 before June 10th; in '86, 109; in '87, very few; but this year on May 31st my total was 176, and still they come.

From my best hive last summer I took sixty-nine sections fit for market, and about forty pounds in frames and unfinished sections, leaving it still with abundance for winter consumption. It is scarcely necessary to add that any success I have is mostly due to the instruction given in your excellent *Journal*.—*Kinnetty Rectory, Parsonstown, June 4th.*

SCRIBBLINGS FROM A COTTAGER.

[1677.] Having kept bees now for some years on the modern principle, I have been a pretty close reader of the *Journal*. One thing I have particularly noticed is the generally good accounts given of honey yields per colony and wonderful strength of stocks in the spring, making one feel when I read them that I am behind again with mine as usual. The thing is, do we have an account of the best and exceptional cases and hear little of the weak and medium, or is it as a rule an average all-round statement? I noticed our good Editor spoke of a couple of stocks he examined containing thirteen frames of brood each on the 17th May (if I mistake not), I think these must be exceptionally forward; my best at that date had about half that quantity of brood. Perhaps my management is at fault, or locality, or both, maybe.

My first adventure with bees was thirteen years ago, when I procured a swarm in a skep. I remained a skeppist two or three years, but, hearing such glowing accounts of bar-frame hives and the enormous yields therefrom, I made it my business to visit the apiary of a friend using frame-hives, and with aid of rule, pencil, and paper, quickly had full dimensions of a good hive to take standard frames, and in a very short time put one together, eagerly awaiting my first natural swarm,—at last it came. I successfully hived it and put it on seven or eight sheets of foundation, my enthusiasm knew no bounds; I verily caught 'bee-fever'—my wife thinks so too. That year and the next were spent chiefly in hive-making, and the manufacture of numerous weak colonies, sugar-buying and boiling (this being no small item). I dearly bought my learning at that little game, I trust now I am in that respect wiser.

The usual number of stocks I winter is about eight or ten, I pack them generally by the middle of October, with abundance of sealed stores (honey if possible), reduce to six or seven frames with padded dummies, use porous quilts, two layers of smooth sacking, and over all chaff-cushions, with mouth of hive four or five inches open. This last winter in two cases I shot loose chaff behind the dummies and over quilts, filling the hives full. The first and last time! oh what a dreadful mess and litter in the spring to clear up, and none the better for it inside that I could see for the extra trouble. I do not, as a rule, touch the hives until March, when I treat each with a cake of candy. At beginning of April, if weather is open I begin slow syrup-feeding, which I continue regularly till honey is plentiful. I do not do any brood-spreading until the weather is warm and bees crowded, when I give a full sheet of foundation, as I find they can bear it, in centre of brood-nest. I manipulate as little as possible, especially in cool weather; in short, I follow the best plans laid down in the *Journal* and other bee books. My hives are all good, well made, sound, and dry, double-walled ones: and yet, notwithstanding my utmost endeavours, I cannot bring my stocks up to the pitch. I hear others do, and I should like to I think the situation of my apiary has something to do with it. I am surrounded with grassland, I suppose nine-tenths in pasture and meadow, with a good sprinkling of the little yellow trefoil and white clover, plenty of furze in early spring, and heath late in the season. I am on a side hill sloping to the south, about Mid-Sussex, but a rather elevated position: and my opinion is, I lose a very large number of bees by the too prevalent cold winds in the spring. My bees are perfectly healthy. My stocks stand as follows: on June 6, one covering ten frames, 2, ditto nine, 3, ditto eight: and one Ligurian lot on three frames, but not covering two, with a patch of brood the size of my hand.

Just a word on Ligurians. Having a desire for foreign bees, and more *amiable* ones, I gave 8*s.* for a pure Ligurian queen off one of our topmost dealers: dethroned the queen of one of my best stocks, and successfully introduced her foreign majesty. This stock has been treated best of all, but has never got its own living. The queen is now in her third year. I just managed to get them fairly strong in time to tuck them up for winter. They are very irritable, more so than my blacks, and a stock of hybrids from them are perfect demons. Immediately the hive is opened, smoke or no smoke they dart at one's face like particles of steel to a magnet. I go on Mr. F. Boyes' side, and say, No foreigners for me; I find them a useless nuisance. I believe most of the noise we hear in favour of foreign bees emanates from dealers and breeders of queens, directly or indirectly. If any of our numerous readers can point out any of the defects in my management, or give me a hint or two, it would be esteemed a kindness by—COUNTRY COTTAGER.

CAPACITY OF HIVES.

[1678.] It is well known that in the matter of hives there is a great divergence of opinion, some masters advocating capacity for twelve, and others ten or eleven frames per storey. Could you not put it as a selected query? as I am sure the tabulated opinion would be of great interest to many besides myself. For instance, though I know almost all kinds of hives by outward looks yet I am but imperfectly acquainted with the inside dimensions of many of them. I rather suspect that the inside length is not a standard quality with many. Another interesting point to clear up would be whether there is the smallest necessity for any form of plinth to single-walled hives. For double-walled hives there certainly is, but in single-walled hives I do not think there is, because the bees quite effectually keep out wet by means of propolis. A plain joint seems all that is necessary and is certainly cheapest. Mr. Simmins in the *B.B.J.*, Mr. Raitt in *Record*, and Mr. Howard in a private letter to me, have all praised and recommended this simple joint.

Of course dealers will turn out any form that there is a demand for; but I would like the opinion of some more

of the bee-masters. The thickness of wood used in hive construction seems pretty well 'settled' between ¾ and 1 inch. By-the-bye in the experiments which Mr. F. Cheshire made to determine the best form of hive sides, did he try what was the difference of having all sides snugly covered and of only having the *top* well covered? I cannot come across the record of any such experiment in any of my books, and yet I think it has a very distinct importance to bee-keepers. To theorise I should say that the cooling from *side* would not be very great, though from the top of course it would be if they were thin.—DUNBAR.

INCREASE.

MAKING INCREASE OF DIVISION.

[1679.] While dividing colonies for increase is preferred throughout the country by a large majority of bee-keepers, I practise and prefer in my own apiary 'natural swarming,' from the fact that apiculture is my sole occupation for a livelihood, and I work the business for all that is in it.

If the bee-keeper has plenty of time and extra combs with which to supply his divided colonies, he will without a doubt succeed with this method. I will say this in behalf of dividing colonies, from the fact that I do not wish to be understood to say that bee-keeping cannot be made a success financially without it, viz.:—

If increase is the bee-keeper's object, and he has plenty of comb-foundation already drawn out, and plenty of money in his pocket, by all means use the dividing method of increase. On the other hand, my experience has enabled me to arrive at the conclusion that *natural swarming* pays best if dollars and cents is the object to be sought.

The question might be asked, How do you control swarming? I do not always do it, but then to a certain extent I do. Just as soon as the bees begin to show symptoms of swarming, I put on the sections, and keep the bees supplied with plenty of room, never allowing them to be idle if there is honey in the fields. In a few days after the first swarm issues, I open the hive from whence the swarm came, and remove all queen-cells but one, if there seems to be no newly-hatched queen present.

Some apiarists may claim that bees will swarm too much, but my experiments in that direction have proved to the contrary. From seventy-six colonies, spring count, I obtained only about thirty swarms altogether for the season of 1887; and in summing up all my reports from year to year, I cannot find one instance whatever of doubling my number of colonies by natural swarming.

Dividing colonies is a safe way to increase, and can be carried to almost any extent; and while I have said so much against it, I could not well dispense with this new improvement in bee-culture, for it is by this means that all my nuclei colonies are formed and queens reared.

COMB AND EXTRACTED HONEY.

Now a few words as to my method of obtaining comb and extracted honey. The apiary is worked for both comb and extracted honey, from the fact that there is to be found in any apiary a number of colonies that do not feel disposed to work in surplus sections. Whenever colonies of this kind are found, they are supplied with an extra set of combs, and by this means they can be induced to store a fair surplus of honey to be extracted. In this way a portion of my apiary is 'rigged up' with two sets of combs for extracting purposes. When honey begins to come in fast, these combs are placed in the extractor about once a-week (or just as often as necessary), and the honey taken out. I seldom disturb the lower storey in extracting.

The rest of the apiary, being composed of all strong colonies, is supplied with sections whenever necessary. When one case is partly full, it is raised, and an empty one placed under it. My favourite section for obtaining comb-honey is the $4\frac{1}{4} \times 4\frac{1}{4}$ in. I use two widths, namely, the 1⅞-in. and the 2-in. Which width is the best I am not prepared to say.

My market demands a section that holds a pound of honey. Sometimes I get this pound in the 1⅞-in. section, and ofttimes in the 2-in. section. My judgment, based upon experience, is, that a section which will hold as nearly as practicable one pound of honey is what the trade and market demand.

In conclusion, I will state that the season's work for 1887, summed up in a nutshell, is not an encouraging report by any means. After uniting a few late swarms in October, I began the winter with ninety-six colonies, having had seventy-six colonies with which to commence the season's work. My sales of combs and extracted honey amounted to upwards of 1700 pounds, about 1500 pounds of which was produced during the last summer. The comb honey was disposed of at a good price. Extracted honey has had only a fair sale, but I am glad to say that the demand is increasing.—*Read at the Nebraska State Convention by* J. M. YOUNG, *Rock Bluffs, Nebr.* (*American Bee Journal.*)

SKEPS AND BAR-FRAMES.

[1680.] 'Brathay' need not wonder why his bees died in the bar-frame hives, if he saved two out of three he must think himself very lucky. Having kept bees in bar-frame hives many years I know a little about them. Why, don't our professors tell you how it is? Talk about ventilation, do we ever hear of spring dwindling or queen-encasement in straw skeps, some propolised as to hold water. Why do we advocate and give ventilation when the bees try to prevent it? surely they know best. The fact is, ventilation means escape of heat, which in winter and early spring is the life of the poor bees. Bar-frames allow of more space for the heat to escape, especially with porous quilts, whereas the dome-shaped straw skep confines it to the cluster. Greater lights speak in favour of ventilation (which is all bosh), but do they ever say a word in favour of confining the heat that the poor bees generate? Having taken in the *Bee Journal* many years I can say that all my bee disasters were caused by acting on many of the articles that should not have been inserted. Theory might be very well, but practice is better. Bar-frame hives are very good for summer use, but do they counterbalance the disadvantages of winter and early spring? Take my advice and experience, keep your bees as warm as possible in winter and spring, stop all ventilation, and not disturb them more than you are obliged to do.—W. EDWARDS, *Mousehill, Surrey.*

[Yes, we experience spring dwindling quite as much in skeps as in frame-hives. Bees do not try to prevent *bottom* ventilation. In hollow trees, and other natural habitats, we always find plenty of space *below* the combs. Very few advanced bee-keepers advocate *upward* ventilation, or if allowed it is insensible. When we tell you that we winter from forty to fifty colonies in frame-hives every year, and very rarely lose a colony, and that hundreds of others do the same, you will perceive that we are not speaking on a subject of which we are quite ignorant. We are old 'skeppists' of fifty years' standing, but we should as soon think of advocating a return to the old slow coaches of a century ago, and condemning modern railways, as a return to the rotten, reeking old skep, redolent of foul brood and all other filthiness, in place of the modern frame-hive, with all its advantages.

Queen encasements? Yes, we have seen quite as many in skeps as in frame-hives. We are afraid you have sadly misread your *Journal* or your experience would have been very different.

You speak of the advice given by the 'greater lights'

on ventilation as 'bosh,' whatever that may mean, but we suspect that more *real 'bosh'* is written in favour of unventilated skeps full of condensed moisture and mouldy and rotten combs. In our experience colonies in both skeps and frame-hives are wintered best over empty ekes.

We venture to prophesy that your raid against frame-hives will not result in gaining you many followers.—Ed.]

A BOY ON THE LANGSTROTH FUND.

[1681.] I was very sorry to see that so few bee-keepers had subscribed to the Langstroth Fund on the 31st of May, and still more so when on the 7th of June no more had subscribed. I herewith enclose 2*s.* 6*d.* towards it (very little, certainly; so little that I am almost ashamed to send it, but as I am only thirteen years old, I have not very much money). I felt sure when I saw in the *B. B. J.* for the 31st of May that three of the manufacturers had subscribed, that for shame, if for nothing better, the rest would be sure to give. I see in Messrs. Abbott Bros'. advertisement for February 2nd that their catalogue would be sent to all their customers; it said, nearly 4000! and these the customers of only one of the manufacturers! but of all these, only twelve have contributed. Now, if all these 4000 were to give but 2*s.* 6*d.* each, it would come to 50*l.* [500*l.*?—Ed.]

Surely the English bee-keepers will not have it able to be said that when asked to help the man from whom they derive all the profit they get from bee-keeping they refused! Surely English bee-keepers will not have such a stigma as that the class tries how much it can get and how little it can give.

As for the Scotch bee-keepers (I am half Scotch), well, the Scotch always were noted for their stinginess; and, as my grandfather said when he was showing me some quarters of a farthing, and I asked him what they were used for when current, 'They were to enable benevolent Scotchmen to give their alms.' But, alas! the good time when these were current has gone, and so only one (a Wigton gentleman) represents Scotland! [This Wigton, we believe, is in Cumberland.—Ed.] In a few years, nay, perhaps in a few months or even weeks, we shall no longer have an opportunity of showing our gratitude to 'Father Langstroth.'—A Young Bee-keeper.

[We have been not a little touched, and amused, by the appeal of our young correspondent on behalf of Father Langstroth, and one would fain hope that it may draw forth from some of his elders a hearty response. We have no disposition to be hard upon him for his estimate of the Scotch character, but we know that one of the principal contributors is a *Scotus Scotorum*, and that some of the others are, like himself, 'half-Scotch.' We are sure that our young friend has a kind and a sympathising heart, and we hope that he may become, in due time, an earnest and a successful bee-keeper.—Ed.]

REVIEW.

The Book of Bee-keeping: A Practical and complete Manual on the Proper Management of Bees. By W. B. Webster. (L. Upcott Gill, 170 Strand.)—We have much pleasure in recommending this Manual to our readers: it is from the pen of one with whose contributions the readers of the *Bee Journal* are familiar. The position of Mr. Webster as a first-class expert of the B.K.A., and as the conductor of a large apiary, conveys the assurance that the information contained in the book has been personally tested, and is the result of practical experience. The work is methodically arranged, is illustrated with numerous engravings, contains a copious index, and the information is brought down to the present time.

Echoes from the Hives.

Brentwood, June 9th.—I called at a gentleman's apiary that I attend to as he is a member of our Association, and find that in a very few days I shall be able to get some sections, that is if the weather keeps fine. I was first last year with his bees for comb honey in this district, and have every reason to think shall be first again. I took 206 lbs. of honey last year from five hives—the best 67 lbs., and the worst 19 lbs.—which was considered very good for the position they are in, as they have to travel a long way from the apiary to get at any fields. An expert in this district told me last year that 25 lbs. average surplus would have been good in the position that we are in.—F. H. B.

Berwick, Sussex, June 9th.—A week ago I received a letter from a married daughter, asking me to run over to her for the day and bring my bee-veil, as she wanted me to take two supers of honey off for her. So last Tuesday, the 5th, I packed up my veil and a smoker, and on arriving there and looking at the hive, was surprised to find both supers (straw ones) well filled with honey. They had been put on late last summer (after having the honey-comb cut out) on the chance of a second harvest, but having only some empty comb in them in October, had been left on all last winter. The bees had not been fed at all, in fact, had never been touched till last week. I have kept bees for many years, but never before known supers filled by the first week in June. It proves to me that bees winter best with plenty of top ventilation, also the value of giving empty combs or comb foundation early in the year.—J. L.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

Eastville.—The spoiling of the turf on your lawn by the holes made by burrowing bees might be obviated by passing a heavy roller over the parts affected.

J. Brown.—Mr. J. M. Hooker's address is 76 Tyrwhitt Road, St. John's, S.E. It will give him great pleasure to furnish you with the information you desire.

John White.—We forwarded privately an answer to your previous letter. We can assure you that the quantities as given of Cheshire's phenol receipt in the last edition of *Cowan's Guide-book* are quite correct.

J. Davy.—*Dead Queens, Transferring, &c.*—1. The dead queens cast out after swarming were supernumeraries. The case is a very common one. 2. Transfer at the end of August or early in September. For method of procedure consult *Modern Bee-keeping* or Mr. Cowan's book. 3. The colony in skep, which has not swarmed, has changed its queen. You can transfer it also. 4. Place section cases on your frame-hive without delay. We are pleased to learn that you have benefited by advice given in the *Journal*.

W. Stokes.—*Feeding Swarm, &c.*—1. Feed about a week or ten days—according to weather—before putting sections on swarm. 2. A 'fair swarm' will cover about six frames. Give more as required. 3. Empty space on sides of hive should be shut off by close-fitting division-boards. Otherwise by 'dummies,' which *hang* as do frames, and fill the same space. 4. An inch and a half between frames. 5. Between

comb and glass of observatory hive allow from three-eighths of an inch to half inch. 6. Single glass if substantial is sufficient for a shop-window.

F. H. B.—1. *Clearing a Bell-glass.*—The best way to clear a bell-glass of bees is to remove it from the hive on a clear day when the bees are at full work, and to place it in a dark room, and give the bees an opportunity of flying to the light and escaping. 2. *Cleansing Wax.*—The old combs should be melted down and freed from all impurities by being strained into any vessel or dish having a smooth surface. When cold any dirt found at the bottom of the wax should be cut off and the wax remelted. 3. *Doubtful Comb.*—We will forward privately a report on it.

W. Coxon.—*Foul Brood.*—The piece of comb forwarded has been submitted to a minute microscopical examination, and it has been found badly affected with foul brood. Prompt measures should be taken to prevent it spreading.

J. Cadenhead.—The bees forwarded were so crushed in transit that it was impossible to distinguish whether they were English or foreign.

C. A. J.—*Deformed Bees.*—Insert frame with sheet foundation, and if you have any doubts as to the age of the queen, replace her.

Malta.—1. *Improving Bees.*—You cannot do better than take out black (British) queens; they produce the heaviest cappers. The progeny would continue to cap well. Any queen raised from these and crossed by your present drones would still be a very great improvement as regards capping to those you have. 2. *Proper Heat for Hive.*—You will find from 80° to 90° is that which entails least labour on the bees during breeding time. They will breed at 60°, but, of course, at that temperature more bees require to stay at home to keep the grubs warm; as 90° are approached more fanners go on duty.

C. C.—*Bees in Skep.*—Your only plan is to drive your bees out of the skep. This is done by turning skep mouth upwards, set it in a pail half full of water to ballast it, fix another skep or box on top, then gently rap the sides of bottom skep on either side with two sticks. The bees will run up into the upper skep. Set them back on their stand. Cut all combs having brood out of the skep and tie them in the frames of hive with tape. Your foundation must be removed first. Place them in hive in same order as they were in skep. Place hive in old position and shake bees out of skep on to the frames, cover up. On fourth day after the tapes can be removed. You should give one or two frames in addition with foundation only. You might super in, say a fortnight, if the honey is coming in freely.

East Dulwich.—*Suspicious Comb.*—Your description does not bear out the characteristics of foul brood; but the plan you propose to adopt will prove of service in warding off the possible danger.

Received from Mr. A. F. Parish, The Tower Apiary, Roydon, near Ware, his Illustrated Catalogue of Hives, Bee-keepers' Appliances, and Bees (32 pages.)

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Appleton, H. M., 256a Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Burtt, E. J., Stroud Road, Gloucester.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley & Flood, 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
British Honey Co., Limited, 17 King William St., Strand.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Benton, F., Laibach, Carniola, Austria.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Simmins, S., Rottingdean, near Brighton.

METAL ENDS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Edey & Sons, St. Neots
Godman, A., St. Albans.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.

COMB FOUNDATION MILLS.

Godman, A., St. Albans.

HONEY GLASS MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Blow, T. B., Welwyn, Herts.
Pearson, F., Stockton Heath, Warrington.

NOTICE.

The *British Bee Journal* is published by Kent & Co., 23 Paternoster Row, and may be obtained of all local Booksellers, and of the following Agents:—

ABBOTT, BROS., Southall, London, and Dublin.
ANDREU, F. C., Port Mahon, Minorca.
APPLETON, H. M., 256a Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Stanley Road, Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BROWN, C., Bewdley, Worcestershire.
DURRANT & Co., Booksellers, High St., Chelmsford.
EDEY & SONS, St. Neots, Hunts.
EDMONDSON BROS., Dame Street, Dublin.
HANDBY, W., Hasland, Chesterfield.
HOLLANDS, W., Waddon Road, Croydon.
HOLE, J. R. W., Tarrington, Ledbury, Herefordshire.
McNALLY, R., Glenluce, N.B.
MEADHAM, M., Huntington, Hereford.
NEIGHBOUR & SON, 149 Regent Street, and 127 High Holborn, London.
REDSHAW, C., Canal St., South Wigston, Leicester.
RICE, J. J., Wensum Street, Norwich.
RUDKIN, F., Belton, Uppingham.
SMITH & SON, 186 Strand, London; and at all Railway Bookstalls.
WITHINSHAW, A., Newcastle, Staffordshire.
WOODLEY, A. D., 26 Donnington Road, Reading.
WREN, L., 139 High Street, Lowestoft.

THE
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Editorial, Notices, &c.

THE ROYAL AGRICULTURAL SHOW.

The entries for the department allotted to apicultural appliances and honey at the forthcoming Show at Nottingham are unusually large, numbering something like 300. Next to the great Metropolitan Exhibition held at South Kensington in 1886, the display at Nottingham (if favourable weather prevail) will be one of the most interesting displays that have as yet taken place in the United Kingdom. A new, and perhaps the most instructive, feature will be the manufacture of comb-foundation; this class has been well filled. The British Bee-keepers' Association are to be congratulated upon having secured such an attractive and instructive exhibition, interesting alike both to bee-keepers and the general public.

Efforts are also being made to extend the attractions of this department in other respects, including the section for lecturing. It is proposed to embellish the exhibits of honey with bouquets of flowers, principally of those from which the honey is gathered.

We are desired to make an appeal to those who are able to send any plants or cut flowers; the latter may be sent per parcels post direct to the show. We trust that many of our friends will lend some assistance in this respect. Communications on this point may be sent to the Secretary, J. Huckle, Kings Langley, Herts.

LANCASHIRE AND CHESHIRE BEE-KEEPERS' ASSOCIATION.

We desire to draw the attention of our bee-keeping friends to the exhibition of bees, hives, and honey, which will be held by the above Association from the 5th to the 7th of September, in connexion with the Royal Manchester, Liverpool, and North Lancashire Agricultural Society's show at Lancaster. When we remember the grand effect of the above Society's exhibition at the show at South Kensington, we feel assured that it will hold forth great attractions to all who take an interest in bees and bee-keeping; and also that it will honourably represent our industry before the Society in connexion with which it is held. One interesting feature in this show to which we would advert is the County Competition; in which the honey must be the produce of at least ten bee-keepers' bees, and all members in the County Association. The prizes offered are on a most liberal scale; and the management of the show is in the hands of those who are fully able to carry out all the details successfully.

CAMBRIDGE BEE-KEEPERS' SHOW.

We trust that bee keepers in the vicinity of Cambridge will give their best attention to the exhibition of honey, bees, hives, and appliances, which will be held at Cambridge, 19th and 20th July, in connexion with the Agricultural and Poultry Show, on Monday, June 25th. Mr. R. Peters, of Downing Street, Cambridge, will be pleased to furnish any information required.

LANGSTROTH FUND.

Since giving the list of subscribers to this fund which appeared in our issue of May 31st, we have received from A Young Bee-keeper, 2*s.* 6*d.*; from G. H., Tiechurst, 2*s.* 6*d.* Will our bee-keeping friends who have not yet contributed to this Fund please to read the account of a 'Visit from Father Langstroth,' from the pen of Mr. James Heddon, on p. 303, so that therefrom they may be enabled to form an estimate of the character of this veteran bee-keeper and benefactor to the bee-keeping industry? As we purpose closing this fund on the 28th inst., will all intending subscribers kindly forward their donations without delay?

PRACTICAL WORK IN THE APIARY.

COMB HONEY IN SECTIONS.

We are frequently asked whether we think good comb honey can be got by working sections at the side of brood-nest, and if there is any difference in the quantity obtained by working in this way or by supering. We have produced section honey now for a number of years, and were amongst the first to do so in this country. Every improvement in the method has been tried and worked by us, and we have tried all the dodges and notions that have been from time to time advocated. We may here give our experiences, and state that we have found by supering we get a larger quantity of honey, and generally of a better quality as regards

appearance. In using the word 'supering,' we mean placing supers on the top, and we never use this word in connexion with side storing. We think it advisable to give this definition, for many bee-keepers have got into the habit of using the words *super* and *supering* indiscriminately in connexion with top and side storing. An examination of the meaning of the word would show how senseless it is to use it in connexion with side storing. *Super* is a Latin word, which means above, on the top, over, upon, on, and is applied to honey receptacles placed on the top of hives. Therefore, to talk of 'side supering' is, to say the least, incongruous.

We have for some time entirely discarded side storing, for although bees take to sections, and commence working in them sooner at the side of brood-nest, they are very much slower in finishing them off than when the sections are on the top. Close proximity to the brood-nest also is the cause of discoloration of the combs, and frequently pollen will be stored in some of the cells, even if excluder-zinc is used.

There is frequently a difficulty in getting bees to start in supers, and it is still greater when the sections are not furnished with combs, and only contain foundation. It is a good plan to have a number of sections containing nice clean combs, which have been built out during the latter end of the honey harvest or in the autumn. When we look over our cases of sections towards the end of the season, all those not partially sealed over are at once removed until the honey-flow ceases. They are then given to the bees, who carry the honey they contain below, and clean them out, so that, after fumigation with burning brimstone, they are put away until they are wanted for furnishing supers in the spring.

Some years ago, before comb-foundation was made as thin as it is now, we used to cut out all the white unfinished naturally built combs we could get, and put them in as starters in our sections; but since we now get beautiful thin foundation, twelve feet to the pound, it is much less trouble to fix this, and the combs built out are equally as good. When a rack of sections is put on, the great thing is to get the bees to crowd up into it and to commence storing surplus at once. If the hive is not crowded with bees, they will not do this, and will, probably, only begin to work in the centre. The consequence of this is that only the sections in the centre get built out perfectly, those on the outside frequently not being more than three-fourths filled. To get all the sections uniform the bees should fill the supers, and begin working on all sections at the same time. If there are not enough bees in the hive to do this, we remove the outer frames and contract the space by means of division boards, so as to crowd the bees below and force them up into the supers. Even a weak hive may be made to yield some honey if the bees are forced up into supers at the right moment, and supers of a suitable capacity are used. Once the bees are fairly at work in the sections, there is little difficulty in making them continue to do so. When the sections in the first case are about two-thirds full of comb, the case must be raised, and one with sections furnished with comb or thin foundation should be placed beneath the first on the top of the hive. The bees will continue their work in the upper case and work down into the one below. In a few days a third may be placed under the second. Usually the top case will be completed first, and should be removed and another one placed below the other two if the honey-flow still continues. We have, however, just had an exception to this rule. In examining a hive with three storeys of sections a few days ago, we took away fifteen sections completed from the top case. The six partly-finished sections were put into the case, and this was filled up with empty sections and placed below the other two. We were rather astonished to find the next case also contained a large number of what, by looking through the passages, appeared to be completed sections; on examination, we found thirteen quite finished and the third case appeared to us to be also well advanced. We were agreeably surprised to find fifteen sections quite finished, so that from this hive we took as many finished sections from the lower storey as from the top. We were deceived at first as to the state of completion of our sections by the glass on the end ones, and we were waiting to see the bees commence to seal these over before removing the top case.

In all forty-three sections were removed and the remaining twenty were put together in one case and returned to the bees, placing another case of empty sections below. The cases shown in illustration Fig. 1 and 2 are the ones used, and although no queen-excluder has been employed, not one of the sections had been used for breeding. Perhaps the metal dividers have something to do with this, coming as they do within quarter of an inch of the openings. We prefer stout tin dividers $3\frac{1}{2}$ inches wide, and find combs worked between such everything that may be desired. When we visited Mr. Knickerbocker's queen-breeding establishment last year, in New York State, we were shown a new divider of wood, which was like a double divider, giving space for the bees to pass up between. It was made of $\frac{1}{2}$-inch wood $3\frac{1}{2}$ inches wide, and was sawn right through so that there was a passage way of a $\frac{1}{4}$-inch.

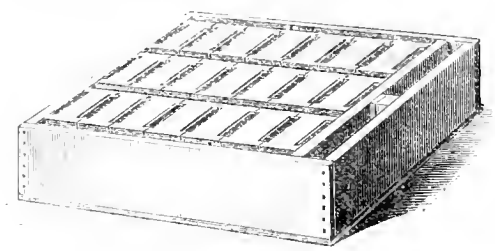

Fig. 1.

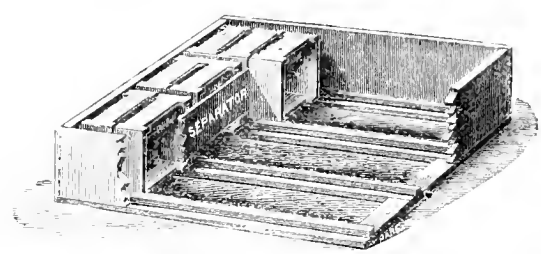

Fig. 2.

Here, then, in addition to giving a passage all round the sections, an additional way is provided to enable the bees to pass between each row of combs without walking over them. We extemporised some such dividers by nailing two on each side of vertical $\frac{1}{4}$-inch strips, but did not find them any better than the ordinary dividers, and the room they occupy is certainly against them. Wood dividers have their advocates, but we prefer metal if of sufficient substance to prevent its buckling.

So long as the honey-flow lasts, continue to remove cases of completed sections, and give empty cases below; but when the flow ceases, no more sections should be given, and an endeavour made to get those partially sealed completed. As we have before stated, all those sections in which none of the cells were capped over are removed, and given to the bees to clean out later. All

the cases are examined, and the completed sections taken out. Cases of uncompleted sections are then made up and placed on the strongest hives for completion. One case, or at most two, should only be given, and as fast as the sections are finished, they are removed, and other unfinished sections put in to fill up the space. The bees must be well crowded in the supers, which must be kept carefully wrapped up. If the bees are crowded in the body of the hive, the unsealed sections placed behind a division-board would soon be emptied, and the honey stored either in the frames or in the sections above. If this plan be adopted, the sections should be introduced in the evening and removed early in the morning, so as not to start robbing; and take care that the bees can get at them only by passing under the division-board, which should not reach quite down to the floor-board, but allow space for the bees to pass under it.

In Memoriam.

We regret to have to record the death of Major von Hruschka, which occurred on the 11th May last in Venice, Italy. Many of our older readers will know who Major von Hruschka was, but, like that of many benefactors, his name has been almost forgotten, and there are probably many of our subscribers who have never even heard the name or known to what extent bee-keeping is indebted to him. Since the introduction of the moveable comb-hive there has been no instrument that has been of so great a benefit to bee-keeping as the honey extractor, by means of which combs are saved, honey obtained perfectly pure and free from any admixture of pollen or brood, with which ordinary honey was usually contaminated. To Major von Hruschka we are indebted for the invention of the honey extractor, which is now considered an indispensable adjunct to every apiary. The idea of employing centrifugal force occurred to him by seeing the way the honey was driven out of a piece of comb which his son was whirling at the end of a piece of string. He invented his machine, consisting of a wooden tub, in which a framework of wood was made to revolve by unwinding and winding alternately a string attached to the vertical spindle. This machine he first exhibited in 1865 at the meeting of the German bee-keepers in Brünn, where it received the cordial approval of all. In view of the great importance of the discovery he was presented with an address of thanks. Although the extractors of the present day are improvements on the first machine made, they all work on the same principle. At one time Major von Hruschka was a prominent bee-keeper, attended bee meetings, and was a frequent contributor to bee papers. For some years, since he has resided in Italy, he has retired from the bee world, and has neither attended meetings nor written for any of the bee periodicals. Notwithstanding this, Major von Hruschka must be always regarded as one of the great benefactors of modern bee-keeping.

USEFUL HINTS.

Weather and Swarming.—Thunder showers and cold nights have prevailed during the last week, and in the gleamy intervals between the showers swarming has been in the ascendant. Cool, showery weather, with little honey coming in, will increase the swarming fever, even in the best-managed apiaries. Returning swarms and cutting out queen-cells may retard swarming for a few days, but it is tiresome work and occupies much time. In most seasons, but especially in one like the present, we have found it least trouble and most remunerative to gratify the swarming propensity by placing the first swarm on the stand of the parent colony and dividing the brood combs between parent and swarm, transferring the super cases to the latter, and treating the parent merely as a nucleus, for uniting in autumn or for wintering as a nucleus. By following this plan we always have on hand a sufficient number of young queens which have been raised in full colonies for superseding old ones, and which demand very little attention. The simpler the plan adopted, and the simpler the appliances in apiculture, the better. There is, we fear, too great a tendency towards the multiplication and complication of bee-keepers' appliances — a necessary evil, perhaps, attendant on the great revival of apiculture during the last ten or dozen years in this country.

Italians.—A short time back a correspondent wrote to us from Ireland respecting Italian bees. He had purchased a queen, said to be quite pure, from a dealer, introduced her *successfully*, and found that her progeny was the most irritable and vicious of any bees he had ever met with. Enclosed with his letter was a box containing specimens of the bees. There was not a bee amongst them showing more than one orange band, and several having no trace of the colour! We quote this as a specimen case. Repeatedly the same thing has occurred to us. Nay, at more than one of our shows we have seen prizes awarded to hybrids as Italians of pure race. No wonder that our gentle and beautiful Italians get a bad name, and that after such an experience 'Blacks' are preferred. We do not believe in the importation of hybrid or hybridised queens to any extent, but attribute the evil chiefly to the sale of English-mated queens, and failure in introducing queens when obtained pure. Every tyro considers himself capable of introducing an alien queen. He follows the stereotyped rule, and takes no further trouble in verifying the introduction. The so-called introduced queen, after, perhaps, depositing a few eggs, is deposed, a queen is raised from one of her eggs and mates with an English drone, and in due course her vicious children appear on the stage, and discredit the pure Italian race. We all know the difficulties in the way of obtaining pure fertilisation in this country, and it assuredly behoves dealers and others to be very careful in sending out queens as pure regarding whose fecundation there is even a shadow of a doubt.

Carniolans, with all their pristine gentleness, beauty, and other excellent qualities, may soon have to be placed in the same category of impure or hybridised bees if no greater care is taken in their case than with the Italians. Twelve years ago, at a Crystal Palace Show, Mr. Neighbour exhibited a splendid colony of this race, in which we failed to discover a single bee showing the faintest trace of an orange shade; but now almost all we see have the upper band of the abdomen more or less shaded with orange. We are told that this is the case in their native country, but if this be true, we incline to the opinion that it has arisen from the introduction of yellow blood. We certainly possess an imported queen which is breeding bees perfectly uniform in colour, and free from the faintest suspicion of orange marking. We should like to have Mr. Benton's view of this dash of orange colour in many of the so-called Carniolans. If it prevails in some colonies, and is absent in others, we should hesitate to pronounce the Carniolans a pure race.

Section-boxes.—Would it not be well to use this term *solely* for the *empty* folding case, and to apply the term '*section*' to the same *only* when *filled* with comb-honey? *Section-case* might then mean the case for holding sections upon a hive, and the word *crate* be relegated to the *travelling* case for conveying sections to market or elsewhere. But cases made of tin or cardboard, with glass sides, for holding single sections, have become all but universal at our shows, and are commonly termed *section-cases*, wrongly, as we think, since the Americans have for many years applied the term to the case which receives sections when in position on the hive, and to call another article by the same name is to create confusion. *Section-holder* would be a suitable name for these glass-sided cases. If we fail to adopt a

proper nomenclature, confusion will certainly become more confounded. The English language is rich enough to supply all our wants. We seem to have adopted the elegant compound of '*pop-holes*' to express our idea of corner passages in our sections. Who fathers the word we know not, but suppose it is intended to convey the idea of the bees 'popping' through the holes. In our younger days ginger-beer was popularly called '*pop*,' and the association in our mind is that of bees 'fizzing' through these corner holes. But to retrace our wanderings. We have received from Mr. Howard of Peterboro' a very neat section-box, grooved on three sides, to receive full sheets of foundation, and split on the fourth side. It is folded upon a block, when the foundation is pushed through the grooves and clasped firmly between the parts of the split side, the entire sheet being held taut. The operation of fixing is very simple and expeditious. The foundation forwarded with the section-box is natural-based, thin, light, tough, and of pure wax, and is the best of its kind we have yet seen.

Second Swarms, where natural swarming is allowed, will now form excellent nuclei for wintering, if placed in nucleus hives on four frames of foundation, and, if the honey season prove a good one, will gather sufficient stores for winter. Ordinary single-sided hives of so-called inch stuff, with ample roofs, will afford protection enough for the winter months.

Lost Swarms.—If an apiary is not carefully watched during swarming hours, most probably swarms will escape, no matter what system is followed. Those apiarists who are absent from home during the daytime will do well to make an evening scrutiny of the bushes and hedges in the vicinity of their hives. Often and often have we found a stray swarm on the evening of a fine day closely clustered on a stump or bush. A few days ago, on looking through our apiary about 11 a.m., after an hour's absence only, during which a watcher had been left in charge, we discovered, by means of a window at the back of the hive, that a large swarm of Italians had departed. The watcher was called to book, but declared that no swarm had issued. We insisted on having the hedges searched, and in five minutes the swarm was found, closely clustered, and weighing about five lbs., at a distance of 100 yards from the apiary. These back windows are very useful in swarming and at other times, and we should not like our hives to be without them.

Tiering up will soon become necessary if fine weather prevails after the late refreshing rain. Let the empty section-case always be placed *under* the partially filled one. Bee-crushing during the operation may be prevented by a free use of the carbolised feather. We cannot bear to see a bee crushed. Besides, the scent of the sting-poison (formic acid) caused by crushing bees, so irritates the whole colony, that an attack in force is sure to be delivered, and woe be to the timid, inexperienced operator, veil, gloves, and Apifuge notwithstanding. This reminds us that the courteous inventor of Apifuge has most kindly sent us a bottle of his sting-preventing fluid, with which we have anointed our hands, and find it most efficacious in preventing stinging thereof. To all timid apiarists, and especially to ladies, we commend the Apifuge.

Judging from the general use of four-way sections, slotted dividers, and bee-space between rows of sections, we shall expect at our shows of the present year a display of comb-honey in the shape of perfectly finished sections far superior to any former exhibits.

Slotted dividers, of a tough, hard kind of wood which will neither warp nor break with fair usage, appear to be a *desideratum* just now, as many prefer wood to metal for this purpose. Mr. Redshaw, of Wigston, near Leicester, has sent us specimens of such, which he claims as a speciality and which, apparently, will answer the purpose. They are cleanly cut, light and thin, having a smooth surface, elastic, and yet tough. The wood of which they are made is called *whitewood* in America —whence it is obtained—why, we cannot understand, unless on the *lucus a non lucendo* principle, for its colour is dull brown or drab.

Breeding, or increase of population in hives worked for surplus, should now be a matter of secondary importance; the brood-chamber, therefore, in such hives may be circumscribed, since there will now be less danger of swarming, and the surplus department should be rendered secure from queen visits by excluder-zinc. When we consider that eggs deposited on the 21st of June will produce workers on July 12th (which workers will commence field-work or honey-gathering about July 26th, when the honey-flow is nearly over), we shall see that such workers will be useless for storing surplus, and simply become consumers. Between the present time, then, and the beginning of August, encouragement to breeding may be discontinued, and the queens allowed their well-earned rest preparatory to producing the autumnal batches of brood so necessary for safe and successful wintering.

Runches.—Under the heading of 'Bee-master of a Century Ago,' the word 'Runches' occurs; and on referring to Halliwell's *Archaic and Provincial Dictionary*, the word is given to mean 'wild mustard' or 'radish,' and appears to be a Cumberland expression.—J. H. N., 14 *Essex Road, Watford, Herts, June 9th.*—We are also indebted to Mr. W. Lees Maclure for a similar explanation of this word.

Remedy for Bee Stings.—Frank Pier gives the following recipe in the *Canadian Bee Journal* for alleviating pain caused by the stings of bees:—Moisten a piece of alum and rub the wound, and the effect will be felt at once.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Reviews, &c., must be addressed only to 'The Editor of the "British Bee Journal," c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' *All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts* (see 2nd page of Advertisements.)

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

BEE-MASTER OF A CENTURY AGO.

[1682.] In your issue for June 7th you have a very interesting article under the above heading. I have before me while I write a work on bee-keeping published more than two centuries ago—in 1675—by a bee-master of those days named John Gedde, who was the inventor and patentee of what is now known as the Stewarton hive. True, Gedde did not have moveable combs, but he so constructed an interior framework that he could remove the entire fabric of comb *en masse* exactly as it was worked by the bees. Gedde's invention, which was patented on the 23rd April, 1675, was laid before the Royal Society at Gresham College, London, and highly approved of by that institution. His hive consisted of an octagonal box, so constructed that successive boxes could be placed under each other as the bees required room, and each box was provided with a small window to ascertain the state of the interior. Gedde advertised his invention as follows:—'A new discovery of an excellent method of bee-houses and colonies, to free the owners from the great charge

and trouble that attends the swarming of bees, and delivers the bees from the evil reward of ruin for the benefit they brought their masters, advancing their owners manyfold above whatever any method heretofore practic'd doth. Experienced seven years by John Gedde, Gent, Inventor, and Approved by the Royal Society at Gresham College.'

Gedde appears to have been a perfect bee-master as far as actual work was concerned, but in theory he was very much at sea. In the beginning of his book he advances certain fundamental truths on which his system of bee-keeping was based. It may prove interesting to some of your readers if I give his reasons *verbatim*:—'1. It is natural for bees to begin at the top and to work downwards. 2. That bees swarm from want of room. 3. That a great hindrance of their labour is confusion about swarming, and misspending their time in luxury. 4. That idleness causeth luxury and extravagance, and unprofitable increase of bees, which, being by this commodious method of labour and industry prevented, the usual but unkind requital of smothering and drowning is likewise avoided. 5. That great charge and trouble attending upon swarming of bees does discourage the owner and consume his profit.'

It will thus be seen that Gedde was fully alive to the importance of allowing ample room, and that much time and honey are lost when bees are allowed to have a lengthened debate on, 'Shall we swarm or no?'

The seasons must have been very different in those days from what we have experienced in our generation. For instance, he states that in 1656 four empty hives were placed close by the side of four strong stocks (he does not say there was any communication between the two hives), and the surplus bees at once went to work in these 'bye hives,' and during eight days in April they had gathered and stored nearly four gallons of honey, which he describes as 'pure virgin honey, and white as milk.'

With the art of driving Gedde was fully acquainted, and advocated artificial swarming by the end of first week in May.

As regards egg-production, he was entirely in the dark, as he states that the queen only laid eggs for the production of queens, and the worker bees deposited eggs from which workers were reared.

One theory he advances which I have proved to be true again and again,—that the sooner the bees are allowed to settle into a state of rest after the honey-flow is over the more forward they will be in the following spring; and late breeding, that is, autumnal breeding, nearly always has the effect of retarding egg-laying in the early spring. I have always maintained that the more rest a queen has between the middle of August and the middle of February, the better she will lay in spring, and no stimulation is then necessary provided there is plenty of sealed store. As regards pollen (meal) feeding, my great difficulty has been, how to keep surplus pollen out of the hive, except in the case of condemned bees set up late in the autumn.

The year 1652 must not have been unlike to what we experienced here in Cornwall in 1887. Gedde states that he had twenty swarms before mid-May, but by midsummer, owing to the drought there were scarce any flowers, and out of his twenty swarms only one survived the following winter.

Gedde's book contains two very old receipts for making mead or metheglin. They are as follows. I give them in full, as some of your readers may be curious enough to try them, that is, if you can spare the space in your valuable *Journal* to insert them:—Mix six measures of water to one measure of honey, and boil down to four measures. To 12 gallons add 1 oz. ginger, ½ oz. cinnamon, 2 drams each of clover and mace, 1 dram pepper grains, in a bag, and boil for a quarter of an hour more. Next day strain through a linen bag, and let it stand three or four days till it work, then barrel it.

The second receipt contains the following heading:—'An excellent receipt for making metheglin, which Queen Elizabeth did so well like that every year she would have a vessel of it.' The ingredients are as follows:—1 bushel sweet briar leaves, 1 bushel thyme, ½ bushel rosemary, 1 peck of bay leaves. Seethe all these, being well washed in a furnace of fair (soft) water, and boil for half an hour. To every six gallons add one gallon honey; let it stand for two days, stirring three times a-day. Then boil again, and skim as long as any dross ariseth; then let it stand to work for three days, after which put it in a barrel in which is hung a bag containing 1 oz. of cloves and mace. In six months it is ready to drink.

If any of your readers should be curious enough to try the above, I should be extremely grateful for a small sample bottle. I must confess I tried it myself on a small scale, and came to the conclusion after I had tasted my brewing that Queen Elizabeth must have been possessed of a strong taste for herbs.

Mr. Gedde gives a few more receipts for the useful application of honey, which I quote *verbatim*:—'1. Mr. Remmant had a friend with such a foul itch that he was like a leper, whom he thus cured. He took an empty wine pipe and knocked out the head, and made a liquor of water and honey, making it pretty strong with the honey, and heat it as strong as he could endure to stand in it, and put it into the pipe, and caused him to stand in it up to his neck a pretty while, and this he did three days one after another, and he was recovered as clear as ever. 2. The use of honey with bread to old folks makes them live long, preserving all their senses sound and entire. 3. Honey will give life to wine after it is flat. Flowers, fruits, and all simple and compound medicines by mixture of it, are preserved from putrefaction. 4. Honey is useful to clear wounds and ulcers. It is very effectual to produce hair in baldness, and to cure agues.'

I do not wish your readers—modern and enlightened bee-keepers—to believe all the above, but simply give it as being interesting in showing what was thought of honey in England more than two hundred years ago.—J. O. Clemmow, *Ladock, Cornwall.*

A VISIT FROM FATHER LANGSTROTH.

[1683.] I cannot convey to the minds of my brother bee-keepers the enjoyment which my family and myself experienced from the four weeks' visit with Father Langstroth, which I shall always remember as an honour, and with the greatest pleasure.

I may say that prior to this time, and owing perhaps to his ill-health, I had had but little correspondence with him, always considering it a duty never to write to him except in answer to his letters. I had met him once in Detroit and in Chicago amid the rush and confusion of conventions, but knew so little of his character that I believe what I am about to say will be interesting to the thousands of bee-keepers who have reaped rich rewards from his life-work.

Nearing eighty years of age, and not in the enjoyment of very robust physical health, I was astonished to find his mental powers as young and vigorous as those of a man of middle age. Indeed, it was a rare treat to converse upon our favourite topic with the man whose clear, practical mind had transformed bee-owning into commercial honey-producing. Together we travelled the past in the field of apiculture, and never was I more interested and edified than in listening to his description of the early days of practical apiculture in this country, as well as to his trials in the introduction and defence of his own invention.

Twice while here he preached in the Congregational

church, and I think I may safely say that many years have passed since our city has been honoured with such beneficent and well-delivered sermons. His voice is round, full, and melodious, fully equal to four times the capacity of any church in the city; and this, together with his impressive manner and kind, moral utterances, caused many wet eyes in his large audiences, and created very much favourable comment among our church-going people.

His perfectly honest, sincere, and kindly spirit sheds rays of sunshine over every household he enters, and, while all regret his departure when the time for leaving comes, they rejoice in the effects of his presence while with them.

Thus I found him whom we bee-keepers have learned to love, and regard as our benefactor, a very exceptional and great man, entirely outside of his greatness as an apicultural inventor. I thank him for what he has written regarding my late invention, and I feel it my duty to make clear the fact that my own invention, and my knowledge of bee-culture which led to it, never could have been but for his own of thirty-seven years ago.

Before we can learn the conditions of the interior of a hive by outward symptoms, we must be able to dissect its interior, comparing these outward symptoms with its internal conditions. Father Langstroth's hive was the first ever constructed which made it practicable for the honey-producer to do this. Now we have learned to almost instantly determine internal conditions by outward symptoms, and this and the invention of comb-foundation, giving us uniform combs led to the first functional improvement of any importance in hives which has been made since Father Langstroth's in 1851. The improvements which have been made have all been in the nature of detail mechanical construction; new and improved clothing for the better carrying out of the construction of Father Langstroth's great invention.—JAMES HEDDON, *Dowagiac, Mich.* (*American Bee Journal*).

BRITISH-MADE COMB-FOUNDATION.

[1684.] I read with much interest Mr. John M. Hooker's account of his early filled sections. We in the far north, with a snow-storm and frosty nights in the middle of June, will be very thankful if we can get a crate of sections filled by the end of July.

One part of Mr. Hooker's communication, however, is is open to criticism. *Without* making trial of Messrs. Dadant's foundation, I am ready to back *some* of our British makers against any American firm whatever. To mention one: Mr. Raitt, Blairgowrie, supplies a foundation that in the unanimous opinion of his numerous customers cannot be surpassed.

In these days of free trade, when America is trying to beat British manufactures out of the field at every point, I think the home article should get a fair trial.

I would therefore seek to amend Mr. Hooker's general statement and say—Try Dadant's foundation against Raitt's, and if the latter is equally good, I shall not venture to say better, why give the *home* article the preference.—W. STOKES, *Balnastraid, Carr Bridge, Invernesshire, June* 15.

HEATHER HONEY.

[1685.] Who is 'Amateur Expert?' and where may he be found? Some of the bee-keeping fraternity in this locality are asking one another the above question. Whether the inquiry bodes ill or well to our genial friend is rather more than I can exactly say. 'He deserves to be kicked to death by butterflies,' I heard one remark the other day; and as the expression followed immediately after the mention of our friend's *nom-de-plume*, I imagine it could only have referred to him, and that the anxiety for information as to his identity and whereabouts was not connected with any desire to do him special honour.

Your readers will wonder what 'A. E.' could have done that he should be thought worthy of so cruel a fate. The cause is to be found in the pages of the *B. B. J.* for the 9th June, 1887, where 'A. E.' explains 'How to make the best of the Heather Honey Crop.' Now, without counting the many skeppists, there are about ten bee-keepers of the bar-frame persuasion in this neighbourhood, all within a four-mile range of some two thousand acres of heather. When they read 'A. E.'s' account of how two hundred sections of heather honey were to be obtained from one hive, glorious visions of fortune-making rose before the eyes of some of them. What an opportunity, too, to have a laugh at the expense of those who stick to their skeps and refuse to follow their more enlightened neighbours! Alas! the laugh was on the other side, and the hopes of great riches ended in RUIN.

Before that number of the *B. B. J.* had long been in print, P. O. O.'s were despatched to the vendors of patent extractors and metal capped honey jars. (What a roaring trade those gentlemen must have done if the heather honey fever broke out as badly in other localities as it did here. And I fear it did. For, to my certain knowledge, one of those extractors was an unconscionably long time in coming, suggesting that the maker had more orders than he could execute in reasonable time.) Honey was slung, hives carted, or carried to the heather; sections put on them, and the result awaited with smiling faces. Ah, me! how those broad smiling faces narrowed and lengthened, as week by week passed away with no signs of honey being stored in sections, till finally a solemn company of men might have been seen with countenances that would have been admirably in keeping in a funeral procession, silently accompanying their hives on their return journey. Sections still on them, but, oh! so light, —so light. Not a sparkle of honey in them. The smiles were transferred now to the features of the skeppists, and the better halves. They had a fine innings. Their scruples as to the advisability of the outlay for extractors and honey-bottles had been very loftily pooh-poohed at the time; and 'A. E.'s' 200 sections per hive at two shillings per section flourished in their faces. It was their turn now, and the dear creatures, at least some of them (I will answer for one), made the most of it. The chance was too good to be lost. Such an opportunity might not occur again for years.

And now, Mr. Editor, where was the screw loose? If you, or any of our men of 'light and leading,' would kindly inform us we should be deeply grateful, as it would help us to make up our minds as to whether or no we shall give the heather a second trial during the coming season. Everyone knows what a very dry summer we had last year all over England, was that the reason? Again, our heather grows on a peat-moss, not on a moor, or mountain. Would that affect its honey-secreting qualities? Perhaps I ought to mention that what we call the heather is only about a fourth part of real heather, the other three parts being ling. Is there so much difference in the honey-value of the two as to account for the utter failure of last year? That both were equally good has hitherto been the impression on the mind of—SPERO, *Milnthorpe, June* 13.

[The 200 sections from one hive was not an exaggeration by our genial correspondent, as we know a prominent Scotch bee-keeper who succeeded in getting that amount, large as it may seem, by the methods given by 'A. E.' last June. We are sorry you had not equally good fortune: try again by all means. The 'screw was loose' in the season we should say, not in the species of heather, as both are good honey yielders. We have many things yet to learn as to the secretion of nectar in flowers. Solar rays, electricity, and moisture, are all large factors,

and in a way too that we cannot really define, with our limited knowledge of the subject. As to the future fate of 'A. E.' we must leave him to deal with you about that; but talking about 'kicking' reminds us that we recently saw our corre-pondent driving a fine specimen of a class of quadruped remarkable for intelligence (?) in the use of its heels, so we would caution you to beware! (See 'An Afternoon Out' in last week's *Journal*.)—Ed.]

DE QUIBUSDAM.

[1686.] I have not noticed any definite opinions as to the cause of loss of hives during last winter. Here in Cornwall there were many such dyings out, and, to tell the truth, among frame-hives. Of thirteen I lost one, and I am not satisfied as to the cause. There were many pounds of sealed stores left, and the only account I can give of the matter is that it was not in the right place. I fear I did not take the trouble to cut winter passages, but then two other hives in the same house survived, and I am not sure that I did more for them than for the other. All three were well covered up, but I think we may learn, not only to leave ample supplies of food, but to take care that it is comeatable.

But on the south coast I hear a sad story of every frame-hive dead in one apiary, while the neighbour's skeps survive. I inquired whether any one had tried frame-hives with straw sides. Yes; one of our committee-men in East Cornwall had done so, but *his* bees, too, had died. Well, I don't know all the circumstances, but matters look grave and want careful consideration, while no good can be done, we are sure, by the impetuous raid of W. Edwards.

What can be the reason why purchasers are unable to get queens within a reasonable time? If I am asked what I consider 'reasonable,' I shall be prepared to answer.

Queen-wasps are very numerous. They are as fond of the nectar of raspberries as our bees are. A rapid smack of the hands together very quickly settles them, or a cautious pinch between finger and thumb—gloved for choice.—C. R. S.

PROGRESS OF BEE-KEEPING IN SPAIN.

[1687.] There has been quite a propaganda carried on, both through some Spanish publications, and also in an underhand way, against the Cowan hive. The Dadant partisans of large and deep frames and general unweildiness have, from the beginning, made systematic opposition to our introducing the English standard for general use. However, we have have hitherto set up hundreds of the latter to a baker's dozen of the former set up by them.

The season is pretty much over at our home apiary, but in the interior of the island, where an apiary of over one hundred hives has recently been established by us, the honey-flow continues, and bids fair to last some weeks.

My youngest son, Johnny, yesterday left Mallorca in company with Archduke Louis Salvador of Austria, who has recently laid the foundation of an apiary on that island. My son's trip is only for a few days to see how the hives get on. The Archduke has for over twenty years resided in Mallorca, where he is a large landed proprietor, and very much loved by the inhabitants.

Some of our products are being shipped to the Barcelona Exhibition; general competitors are doing likewise. Should you visit Barcelona this season, I would thank you to let me know, as my eldest son, Francis, will be there, and would not only be happy to make your personal acquaintance, but, if possible, to be of some use to you in that land of the Dons.

We would still be more delighted if you would cross over and pay us and our apiaries a visit. Nothing would be omitted to make your visit agreeable.

My son publishes a semi-monthly—*Revista Apicola*—a sample of which I enclose.—J. C. Andreu, *Mahon, May 23rd*, 1888.

[We are sorry if there should be any dispute regarding what hive to adopt. The nature of the product required ought, in a measure, to decide. The large frames, such as the Dadant, are good for production of extracted honey; but there is no question about a shallow frame, such as the English standard, being the better suited for sections. We had intended to visit the Barcelona Exhibition, but are sorry that our health has been too bad to allow us to face the trying heat of a Spanish summer; but we hope the visit to your apiaries is only a pleasure deferred.—Ed.]

DRY-SUGAR FEEDING.

[1688.] In your issue of May 31, 'Notices to Correspondents,' you tell 'W. D. Griffiths' it is unwise to put brown sugar on top of frames, with all due deference to your experience, I beg to differ with you.

Two or three, perhaps four, years ago an 'Old Bee-keeper' said in the *Journal* that after trying a great many methods he found that dry-sugar *behind* the dummy-board was the best for supplying food during the winter and autumn, and saved the bother and mess of syrup. I tried his plan, but when I came to change hives in the spring, I found the sugar had run all over the floor-board, making a nasty mess. The following autumn I placed a piece of muslin over the frames, and then spread five or six pounds of sugar over and pressed it down with my hands to make it firm, then put on the usual quilts, when I examined the following spring I found the bees had eaten through the muslin, and burrowed through the sugar in all directions. What was left came off in crusts and left the combs quite dry and clean. Since then I have treated all my hives in the same manner whether they are short of food or not, for this reason. I have read in the *Journal* that it sometimes happens in cold weather that stocks are starved through the crystallisation of their honey. In a case where this happened if there was sugar above the frames there would be sufficient heat and moisture from the cluster to keep it always ready for use, and so a valuable stock would be saved from starvation. After changing hives in spring if the sugar that has not been used be put into one or two straw hives and moistened, and then placed some distance from the hives, the bees will soon find it and clear it away: it then answers the purpose of spring feeding.

I wonder if the roof of W. D. Griffiths' hive leaked if it did, I can imagine the mess there would be. If you would kindly insert this in the *Journal*, perhaps some of our experienced bee-keepers would give their opinion and experience.—G. Whalley.

[We think Mr. Griffiths' experience was sufficient to deter others from following his example, since there are so many better ways of feeding, and it is so easy a matter to supply sealed food in the autumn, there is no necessity for running the risk of rendering the bees and combs a sticky mass.—Ed.]

SHADING HIVES.

[1689.] Having got so many useful hints, not only from Mr. 'Useful Hints,' but from other kind writers, who not only give their time to write, but also give freely the experience they have gained—in some cases, perhaps, at a great deal of trouble and expense, I feel in duty bound to try and help some one: and now that it is of the uttermost importance that bees be kept from swarming—at least if the bee-keeper has got for his object 'honey'—shading hives will be found no small factor in preventing swarming.

The following, how I manage to shade mine, will, without doubt, give satisfaction to any who care to try

it, especially those who have only, like myself, a limited number of hives, say ten or twelve. Get four strong posts, say four or five inches thick, nine feet long. Supposing, of course, the hives to be shaded are in a straight row, about one yard apart, if the two front posts are eighteen inches shorter than the two back ones, all the better. Sink them all four a good yard in the ground, at each end of the row of hives; give attention to ramming the soil extra firm round the posts as you fill them in, or the whole affair will be a failure. The back posts will stand out of the ground about six feet, the front ones about five feet, at (say) five feet from each other, that is, across the ends of the row of hives. Next get two pieces of strong wire extra strong, each piece four yards longer than the entire length of the hive, or, more strictly speaking, from post to post lengthways: make one end on both posts fast down at the bottom, wrap round post, and take over the top, having sawn a piece out the shape of a V, to let the wire lie in. You will not want a lot of shading,—the length of the distance from post to post and five feet wide old sacking, wrappering calico, or anything that you can get, the cheapest will do if it be strong. Now ring-stitch firmly about two feet apart; if you don't want to go to that expense make loose loops with strong string or tape, run these on to your wire, working for your own comfort at the back of your hives as much as possible. Now if you get some one strong to take a wire each, and lift it over the tops of the hives, placing the wire over the other two posts, which last two ends may be weighted down with two very heavy stones. Now let two, three, or four line props take a part of the weight in the middle, and you have one of the best shades known by—A Lincolnshire Novice.

HALF A QUEEN BETTER THAN NONE.

[1690.] I take the liberty of asking you to insert the following account of a little adventure I recently had with a swarm of bees, which seems to prove that half a queen is better than no queen at all.

While sitting reading near my apiary a few days ago, a lad came to tell me that there was a swarm of bees on a tree close at hand. I at once took a skep to the spot, when I found the bees clustered round the trunk of an ash-tree. I fixed the skep against the tree above the swarm; and while waiting to see if the bees would go up into it, I was told that this same swarm had been taken once, and that it had returned to the same tree.

I found that the bees had been subjected to some very rough usage, stones and pieces of turf having been thrown at them; and this, it seems, had been going on for some days, the ground being covered all round with missiles.

Nothing would induce the swarm to enter the skep, though I gave them a cake of brood, and smoked them below, causing them to cluster together—higher up the tree.

Having almost despaired of being able to secure them, I was attracted by a small cluster upon the ground some distance from the tree. I went to see the reason of this, when, to my surprise, I found the queen still alive, though her head had been knocked off by a stone. I at once secured her by means of a long thorn to the interior of the skep, when the bees immediately entered apparently quite contented.

This swarm has since been housed in a bar-hive; and though the queen has long since ceased to do duty with the remaining portion of her body, the bees are working well and will soon receive a ripe queen-cell to keep them going. I hope I have not been intruding too much on your valuable space.—John T. Sibree, *Bussage House, Stroud, Gloucestershire, June* 16.

Echoes from the Hives.

Wye, Kent, June 12.—The weather here for the past few weeks has been very favourable for bees. The first swarm we had was on the 13th of May, which came from a straw skep. Bees are very busy now working in sections, and I have some 1-lb. sections which will be ready to take off by the end of the week. I hope to hear good reports from other districts.—H. Head.

South Cornwall, June 15*th*.—Nothing very noteworthy seems to have occurred here for some time. Many persons are under the impression that this must be a very early neighbourhood, but the idea is an erroneous one. Early garden produce comes (mostly) from the west, and early honey—from Farnborough! Our winter was as long as in other parts of England, and I do not think much breeding went on during that time. By the middle of May matters looked favourable, and during the latter half of the month rapid progress was made. Had the weather continued fine, we should have had some early supers; but while our London papers reported drought to the eastward, we were getting showers, which were the making of our grass and mangold crops. But, alas! for the hawthorn bloom, which is most profuse. Fair and showery days alternate, so that the chief produce is an immense quantity of very light pollen. *Some* honey is being brought in, I know from inspection, but there are many mouths to eat it. I had hoped to put on my first crate to-day, but the weather forbids it. The only consolation is that our stocks are getting very strong. The first natural swarm I have heard of came out on Sunday, the 3rd. Two days ago I forced a swarm, and yesterday a neighbour's frame-hive swarmed. There had been a super on it for days, and a good deal of foundation was drawn out, but they *would* go, and they *did*. In the evening the hive was examined, and a newly-hatched queen discovered. I presume this state of things was the result of the variable weather; but is it not rather strange that the elder lady allowed the younger to live? Charlock is becoming plentiful, to the advantage of the bee-keeper rather than of the farmer.—C. R. S.

Harborne, Birmingham, June 16.—These cold north and east winds we are having, and, as a result, very cold nights, keep our pets from being so busy, as no doubt they are longing to be. The strongest colonies are now at work in the supers which have to be kept *very* warm. The first swarm I have seen or heard of came off on *Sunday* (as usual!), June 10, and settled in a neighbour's garden, which frightened him so much that I believe he locked himself in the cellar, and put a chair against the door. They came from a straw skep in a small apiary near here. Clover, raspberry, and field beans look very promising.—H. J. Sands.

Stocket, Aberdeen, N. B., June 16.—As yet we have had a most unfavourable season here, and stocks are in a very backward condition. I have had to unite several of my weaker stocks; and even strong stocks have comparatively little brood on account of the excessive cold. Last year my first swarm came off on June 15, but there are no signs of swarming this year yet. Many stocks in the neighbourhood have died during the winter, and spring: in fact, about a week ago a neighbour found one of his stocks almost dead of starvation, and only part of them recovered when sprinkled with warm syrup. I gave my strongest stock a crate of sections a few days ago; but as yet the bees have had little opportunity to gather even as much honey as they consume.—A. Cadenhead.

Honey Cott, Weston, Leamington, June 18.—The past week has been showery and very cold, with scarcely any sunshine, bees hardly daring to stir out. Hives and supers are full of bees, but no honey coming in of any account, although the fields and hedges are covered with flowers in great profusion, but the cloudy sky and this beastly north-east wind stop the secretion of honey, while the season (which is usually now at its best) is fast hastening away. This morning at 6 a.m. the ther-

mometer stood as low as 56° and the cloudy sky, and strong north-east wind blowing made one think of Christmas weather rather than of being but a few days of Midsummer day. Fortunate are our friends who have already been able to harvest some honey from fruit blossoms, &c., but we must hope on and hope ever.—JOHN WALTON.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

W. J. NAISH.—*Burrowing Bees.*—The bees found on the lawn are either of the family of Andrenæ or a species of humble bee, of which there is a great variety; the types may be classed under the three following heads:—*Apis muscorum*, Linn., the moss garden humble bee; *Apis lapidaria*, the lapidary humble bee, which builds on the ground among stones, but also uses moss; and *Apis terrestris*, which builds in the ground, using no moss. We cannot advise their extermination by the use of chemical dressing, as the same would spoil the grass. If the ground was constantly and heavily rolled the pressure no doubt would kill the larvæ, as the holes do not extend very deep.

LINCOLNSHIRE NOVICE.—*Queen-cells in Hive.*—No doubt you overlooked the queen, which is easily done in a hive of fifteen frames filled with bees. Colonies at this season often make preparation for swarming which, through the exigencies of the weather and other matters, are not carried out—hence your finding queen-cells.

T. DAVISON.—*Adulterated Foundation.*—The sample of super foundation is most unsuitable for comb building, as it is mainly composed of Japan wax (not bees-wax). Pure white bees-wax is an unknown substance; bees-wax is not white, neither can it—without a foreign admixture—be made that colour. We quote from the highest authority on the *Materia Medica*, 'I have never met with pure wax perfectly white.' A large quantity of spurious foundation is now being sold. We are not surprised at the bees neglecting for a time the sections fitted with such foundation, which after being worked out would most certainly taint the honey with the odour—to quote yourself—of composite candles, and spoil the sale of your sections. (See reply to E. G. Elliott.)

A CUMBERLAND NOVICE.—*Transferring.*—Alter your hives to the Association standard size, or you will regret not doing so in the future. When the bees in skeps are strong, fit frame-hive with whole sheets of foundation, then lay a sheet of excluder-zinc on top of frames, drive the bees with queen from skep and place skep on top of excluder-zinc, stopping up all means of egress or ingress to skep except through the entrance to frame-hive, then run the driven bees in at this entrance. A portion of the bees with queen will remain in frame-hive and draw out the foundation, while the rest will rear the brood in skep; in three weeks the skep can be removed and the bees turned into frame-hive, and the quilts or supers put on.

C. D.—*Bees refusing a Queen.*—By this time we should judge the colony to be too weak to be of any use, even if you were to introduce a queen successfully. Unite them to another colony, or portion of another very strong colony that can spare two combs of brood and bees; when they have settled down quietly introduce a queen.

REV. F. W. PUDSEY.—1. *Foundation for Swarms.*—There is no objection against so alternating the foundation, but we prefer all full sheets. 2. *Placing Racks on Swarm.*—When all the combs are fully drawn out; except in the case of a swarm hived on the stand of the parent stock, when they are to be put on as soon as hived. 3. *Mason Bees.*—From the description of the bees, and from the appearance of the cells and contents forwarded, we conclude that they are those of the Mason bee (*Megachile muraria*). They are most interesting structures. For full description of them we would refer you to Kirby and Spence's *Entomology*, pp. 248, 249, ed. 1860.

WOOD GREEN.—1. *Immature Bees thrown out of Hive.*—Shortness of stores consequent on the bad weather preventing the bees collecting. 2. *Swarming.*—The queen refused to accompany the bees or returned to the hive; if she had settled you would have had a swarm. You had better continue feeding during the prevalence of bad weather. 3. *Musty Syrup.*—Throw it away.

E. G. ELLIOT.—*Adulterated Foundation.*—Your sample of foundation is even, if possible, worse than T. Davison's. (See answer to same in this issue.) A treatise is, we believe, being compiled by a well-known bee-keeper on the adulteration of bees-wax and the methods of detection. Perhaps this may have the effect of improving the quality of much on the market or preventing the sale of such stuff by a few,—we may say a very few.

R. DE B. S.—*Are Bees a Nuisance?*—There is a great amount of uncertainty as to what in law constitutes 'a nuisance.' In the year 1885 the question as to whether bees were a nuisance was a subject of discussion. One of our correspondents—a legal gentleman—wrote to us very fully on this point. From his letter (Vol. XIII. p. 269) we deduce that there is nothing in books of law touching this precise point, and that therefore the question must be decided upon general principles and from a comparison of decided cases upon similar questions. The conclusions that our correspondent drew from these cases were, 1, Every person is bound to use his rights without hurt to his neighbour. 2. The injuries caused by ferocious animals are actionable without proofs of negligence. 3. Any person congregating substances (or anything else) upon his land, is liable for damage done by them on their escape. Therefore, any person having bees (which are ferocious animals) on his land, is responsible for any injury (or, it would seem, even discomfort or annoyance) that they may do to his neighbour, without any proof of negligence on the part of the bee-keeper. It has, however, been pointed out that it would be difficult to establish the ownership of bees committing the nuisance.

A. J. A.—The dead bees forwarded appear to be affected with *Bacillus depilis*, and, having been thrust out of their own hives, they have endeavoured vainly to find a lodgment in yours.

A. W. F.—*Dead Queen.*—The queen has been subjected, as desired, to a *post-mortem* examination. She was the old queen, who, being found by her subjects unequal to her duties, was dethroned, and cast ignominiously out of the hive.

CHESHIRE.—*Selling Bees.*—We should strongly advise a natural swarm under the circumstances. You need not be afraid of them returning to the parent stock if moved to their new location as soon as possible after hiving.

C. D.—1. *Adding Swarm to Weak Stock.*—We should shoot the swarm and the bees belonging to the weak queenless stock on to a sheet at the entrance of the hive at present used by such weak stock, first cutting

out the queen-cells. They will run in together, and you should have no difficulty. Or you might let the skep and the weak stock exchange stands some warm day when many bees are on the wing. This would strengthen the frame-hive at the expense of the skep, and most likely prevent them swarming. 2. *Doubling Hive.*—The queen can be confined to the lower box by excluder-zinc or honey-board; but many bee-keepers prefer the absence of excluders.

WOODFORD, ESSEX.—*Honey District.*—You should get a fair crop of honey from the hawthorn, clover, and limes, but all things considered, we should much prefer either Old Southgate or Finchley.

MALTA.—*Bees Hanging Out.*—This may arise from their finding it necessary to change their queen, which induces a sort of lassitude. Sometimes when stores are not plentiful, and the evening close and muggy, bees will hang out for convenience sake.

JAMES FLEMING.—*Dead Queen.*—There are no outward signs of disease about this queen. No doubt the bees, finding the frame of eggs you gave them, concluded their queen had layed them, and therefore saw no necessity to raise queen-cells, although the fact of their commencing two shows they had reason to doubt her further efficiency.

BEGINNER.—The brood was turned out from lack of food. A fertile queen at this time of the year adds daily 2000 young bees to the population of a strong colony; the demand, therefore, on the stores is very heavy; and the bees, in their way, are endeavouring to equalise the law of supply and demand. (See J. E. O.)

J. E. O.—The reply to 'Beginner' will apply to your communication. The immature brood being thrown out is due to the provident foresight of the bees. We should advise gentle feeding until honey is coming in freely, a quarter a pint per night to each hive. We are pleased to be able to congratulate you on your cure of foul brood, and should be glad to receive an account of your experience.

F. J.—*Mouldy Pollen.*—The comb was quite healthy and wholesome; but the cells being filled with mouldy pollen, it was the reverse of nice, and we should advise that foundation should be used in its stead.

T. O. SCRIVENER, Bicester, describes a gentleman's lawn quite perforated by Andrenæ for a space of fifteen yards, and would be obliged by any bee-keeper giving advice as to how they may be got rid of. He has forwarded us some bees and cells. The bees are *Andrena Trimmerana*.

SHOWS TO COME.

July 9–13.—Royal Agricultural Show, Nottingham. Secretary, J. Huckle, Kings Langley. Entries closed.

July 19–20.—Cambridge Agricultural Society at Cambridge. Secretary, R. Peters, 7 Downing Street, Cambridge. Entries close June 25th.

September 5–7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 1st.

Business Directory.

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NOTICE.

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Editorial, Notices, &c.

BRITISH BEE-KEEPERS' ASSOCIATION.

Prizes for honey open to members of the British Bee-keepers' Association are offered for competition at the Annual Show of the Notts Association, to be held at Sutton, in Ashfield, on July 25th, entries for this Exhibition close on July 9th. Application for schedules to be made to Mr. F. H. K. Fisher, Farnsfield, Southwell, Notts.

NOTTINGHAM.

Members and other bee-keepers who may be willing to forward specimens of bee-flora for decorative purposes are requested to communicate with the Secretary, J. Huckle, Kings Langley, without delay. Arrangements will be made for the carriage of small parcels of such from those who may be willing to assist.

A BEE-MASTER OF A CENTURY AGO.

(*Concluded.*)

Our previous notices of Bonner's book will have revealed to our readers the large acquaintance he possessed with both the theory and the practice of bee-keeping. We have had to point out some evidences of errors on his part, and to notice his dogmatism combined with much common-sense. We have seen also, here and there, a specimen of his quiet humour. He can occasionally deal some heavy blows of irony after refuting theories of other writers. Here is a sample of the way in which he speaks of such theories: 'This hasty begot child will have few to patronize it; if its father does not strangle it soon, it will die of its own accord. Mr. Keys has lent it some lusty blows already, and wherever it comes it is sure to meet with the like treatment. Its safest course is to stay with its father, unless it wants its own ruin and his folly exposed.'

His power of graphic description and the striking good sense running through his book are so suggestive, that, in conclusion, we cannot forbear giving his quaint 'history of an uncautious man's bees.' It runs as follows:—'It is generally observed, and there is too much truth in it, that Bees thrive best with people for two or three years after they get them at the first. The way this happens is thus: When a person buys a stall at the first, she is generally a good one, is 30 lbs. weight, has plenty Bees and honey; then, if next summer be good, she will probably swarm twice, and then he asks his neighbour's advice, and he advises him to kill the second swarm, and keep the first and her mother, which are good stalls, and bid defiance to the three capital enemies, viz., cold, robbers, and famine.

'The second summer being good, they both swarm twice again, and the owner thinks he is a thriving Bee-master (as so he is). He again, with his neighbour's advice, kills both the casts or second swarms, and still keeps the two old hives and their first-born which makes four good stalls. Again the third year is but a middling summer, often cold and raining; however, his stalls were good, two of them swarmed once, and the other two twice. In harvest he again kills both his two second swarms as usual, and begins to think now he knows as much about bees as any man, and asks no more his neighbour's advice how to set aside his stalls, and thinks that as he always kept the mothers and their first swarms, and they did well; therefore, he sets aside the four old hives and their top swarms, which make eight stalls. Now his counting faculty begins to operate, and he assures himself of twenty hives next year; but, alas! how is he perplexed when he thinks his bees increasing so fast, his yard will soon not hold them! Ready-wit, his bosom friend, relieves his agitated spirits, by informing him that it is only to make his garden larger. Now he is at great pains to get his bees covered and made fit for winter, and lets them stand in hope of a good increase next summer, and falls too to make sixteen empty hives, and as many boards to receive his next year's swarms.

'A fine day about Martinmas causes the owner to take his friend along with him to see his flourishing garden full of bees, where he entertains him with a lecture on the profit of those useful insects. He goes by two or three of his hives, and they are flying smartly out and in, which pleases him well. The next he comes to is not so brisk. He may stand before her entry without being the least injured by her stings; he excuses her laziness by informing his friend that they do not come out of the hive all alike at the same time. However, to satisfy him that she is a good hive, he raps on her side to let him hear her sound; but as ill-luck would have it, she will not answer that summons. He turns her up, changes colour, and says, "Surprising! She has not a bee in her, but some honey at the top of the hive. What has happened her?" says he. Tells all his neighbours the astonishing news; turns a little more pensive about the profit of bees. However, he still has seven; he wishes they may stand the winter and spring. A cold storm comes on, and lasts eight or ten weeks, after which fine weather again: the bees go an airing, and the good man comes to see how they come on now. Passing by some

of them, he sees how throng they fly about, and rain away their ordure from them, as appears on everything that is white. He sees one at some distance, not so throng as he could wish; runs to her, fears the worst, raps the hive. Out jumps a mouse at her entry (which was rather large); turns her up; dead bees half eaten, and a good many shorn combs on her board; a great many bees sitting very close (rather over) betwixt her combs. The peaceable bees never offer to fly at his face; he can view them as he pleases, and never receives a single sting. He concludes she is dead. Gives over making empty hives.

'He has still six. Says, "I wish they may not all die." In March four of his hives carry loads hard. The other two are as busy, but not carrying so fast. A bee loaded in half an hour is a good deal for them. However, the entries have full as many bees about them, and rather to the rather, and far more dead ones, and many a gallant soldier crawling about in his wounds before the gates of the hives. The owner thinks, "Some man's bees are for robbing mine, but they had better stay at home," says he, "for my bees kill them fast." In a day or two at night the good man goes to hear how his bees sound. The four carriers please him well by giving him a good song. The other two are not so loud. He claps their sides to make them speak better out. They turn sulkily on him, and obstinately refuse to answer. He grips at them to feel their weight, but by pulling them up too hastily, he almost falls backward by their coming too quickly from the board. When recovered, he is startled again to see other two of his hives full of nothing but deaf combs which the robbers have left. He throws them from him as useless, and the fall breaks all their combs. When come to himself again, he says, "I have still four yet, and am richer than when I began." The four carry briskly all April, and he thinks all danger is past now; but, alas! eight days misty weather in May keeps his bees all close prisoners in their hives. A fine day returns again, and three of his bee-hives fall to work heartily, as if they meant to hurry home all the honey in the neighbouring flowers before another rainy day comes. The other is not so careful. She appears as if she did not value a good day much. Not a bee to be seen about her gates, except here and there one something like dead. The owner begins to quake again; says it is not possible she can be dead after carrying so much: is afraid to lift her from the board: must do it: she is motionless, and the board covered with dead bees, and her combs full of dead young. Oh, foolish man! why did you not ask your honest neighbour's advice, who would have advised you to kill all the five hives that was light and scant of bees, which at harvest, one with another, was worth fifty shillings, but now is worth scarce eight altogether; besides all the vexed hearts you have got with them? Be sure you never do the like again, if you be wise. Rather kill all your light hives, and purchase heavy ones with their cash. Suppose it should take the price of two of your weak hives to purchase a strong one, you will have more profit, and fewer to laugh at you in the end. Would people never keep any but thirty-pound ones, their bees would thrive all along as well as at the first. I have given the above history to deter others from taking the same steps, which this imprudent man did.'

As we have been taking this telling extract from Bonner, we have thought what a good exercise it would be for novices in bee-keeping to sit down and both think out and write out the reasons of the 'uncautious man's' failures with his several hives. Nor would it be a bad plan to read Bonner's story to those who persist in old methods of bee-keeping, and then to point out to them the various ways in which, by the use of bar-frame hives, the touching disasters of the 'uncautious man' might have been avoided or remedied before the fatal point had been reached.

Once more we repeat our desire that our notice of 'A Bee-master of a Century ago' may induce many of our readers to ascertain for themselves, by observation and by reading standard works, important facts relating to the natural history, the habits, the possibilities, and the peculiarities of our favourite insects. Perhaps it is always true in apiculture that 'a little knowledge is a dangerous thing.' It cannot but be good to obtain all accessible information on this most engrossing subject.

GLEANINGS.

Respecting hibernation, W. Malone says in the *American Bee Journal*: One thing that bee-keepers should recollect when writing on the subject of hibernation is, that if hibernating animals, such as ants and snakes, be exposed to cold, freezing air for thirty minutes, there is no reviving them. They may be surrounded with frost for months and live; but thirty minutes of exposure as before stated will kill them. Try it and see.

In the *City and Country* A. H. Duff says: Queenless colonies may for a time do well, but certain destruction is sure to follow if they are not provided with queens in due time. If a colony in the act of storing surplus should swarm, and the swarm hived to itself, the surplus receptacles should follow the swarm, as they can be brought to the condition for storing much sooner than the parent colony from which they issued. All second or after-swarms are a failure if surplus honey is the object. After-swarms may be prevented by removing all queen-cells but one, or, what is better, remove all and introduce a fertile queen, of which a supply should always be on hand for such emergencies.

According to the *Revue International* we find that the French Government has conferred the honour of 'Chevalier du Merite agricole' on M. C. de Ribeaucourt, honorary president of the Société Romande d'Apiculture. He is the author of a manual which has passed through four editions, and was translated into English by A. F. G. Leveson Gower. At his instigation the Société Romande was founded in 1876, and for six years he was its chairman.

In the *Deutsche Illustrierte Bienenzeitung*, M. Gravenhorst referring to Apifuge says, that a similar substance has been spoken of in some of the German bee-papers and is called 'Apiol.' M. Eduard Metzger says that Apiol is an etherial extract of parsley seed, and kills any bee coming in contact with it. Spraying with Apiol is not admissible, but with certain precautions it can be used to prevent robbing and in uniting bees, owing to its strong smell. From three to five drops are placed on blotting-paper, which is put on the floor-board under the frames. In a few seconds the scent of the Apiol permeates the whole hive. If used in larger doses the bees become stupified. For uniting two colonies each one is scented in a similar manner.

In the *American Bee Journal* W. Klintworth describes how foul brood was cured in Germany by G. Danker, a leading bee-keeper, who lived near Bremen. As he depended on bee-keeping for a living, foul brood breaking out in his apiary was a serious matter to him. The remedy he employed was sulphuric acid, which he mixed with honey, and fed the diseased bees. The proportions are not given, but it is said that the bees got well. Another instance is given of Mr. Wendelkin in the State of Ohio, who also cured the disease by administering sulphuric acid mixed with honey. When he first commenced to feed it he gave it so strong that they would not eat it. Then he weakened it with sugar syrup. If it is mixed with honey, Mr. Klintworth says, it can be fed to bees stronger than when mixed in sugar syrup.

A correspondent of the *Deutsche Illustrierte Bienenzeitung*, v. Stachelhausen, says, that in Cape Colony, Africa, is found a honey plant, named *Protea mellifera*, called by the natives sugar-bush, sugar-tree, and tulip-tree, which

is so rich in nectar that the sweet juice is collected, evaporated to a syrup, and used as a medicine. The aroma of this syrup is very pleasant. The plant blooms in the autumn, and the blossoms are half filled with the sweet juice. [This plant was alluded to by us, and the experiments made by Dr. v. Planta on the nectar of this and other plants were described in *British Bee Journal* for 1886, p. 542.—Ed.]

A. H. Duff, in the *City and County*, says: One of the most important points in securing large crops of honey is to give abundance of room for the bees to store it. This is also one of the best preventatives of swarming. In the Italians and the other new races, however, this is not a decided prevention, but has some effect. But if this fails, and preparation is commenced (which will be the construction of queen-cells), we can postpone it by removing the queen-cells. This may be followed up just as long as it will produce the desired effect. This will oftentimes wear out, and the swarm being tired of this kind of treatment, will come forth, leaving behind no trace of queen-cells whatever. There is but one remedy left, provided we wish them to occupy the hive as formerly. This is to take their queen away from them, and put them back again as before. This compels them to remain until young queens are reared, which will require eight or ten days.

In the *Bee-keepers' Review*, W. F. Hutchinson says, That it is unprofitable to devote tillable land to the cultivation of plants that produce honey alone is well-nigh universally admitted; while alsike clover and buckwheat seem to be about the only farm crops that can be planted with the hope of also securing a crop of honey, the chances being largely in favour of the alsike. Of its excellence as a honey-plant there is no doubt, while it only requires suitable soil and treatment to make it a valuable plant for other purposes. For sowing in waste places there is probably nothing equal to sweet clover. Pleurisy-root may be equally as good, perhaps better, but it has not yet been so thoroughly tried. Let all remember, however, that little patches of honey plants are of no value, may even be a detriment, that to be of any value there must be acres and acres of bloom.

In the *Farmers' Review* W. S. Culliman says, That many specialists who work their bees for comb honey contract the brood-chamber to five or six frames before giving the first case of sections. This gives the bees less room below, and less brood to take care of, and so drives a greater number of them into the supers, by which means, of course, more surplus is secured. Should any one wish to practise this method, all they will need to do is to remove one or two frames from each side of the brood-chambers, and substitute a division-board or dummy in their stead. The division-board should be of the same dimension as the frame, and have projecting tops, so as to hang in the hive just as the frames do, and one of them should take the place of each frame removed, for if the space occupied by a frame in the brood-chamber be left vacant, the bees will certainly fill it with honey when they become crowded for room.

The *Canadian Bee Journal* recommends stimulative-feeding by placing syrup in the combs. Empty combs are filled with honey diluted with water or sugar syrup by holding the frame at an angle of 45 degrees. The mixture can be poured into combs without any trouble. The frames are then placed in the rear of the brood-nest, and the inmates of the hive feel that honey is coming in plentifully, and their efforts are turned in the direction of brood-rearing. Another advantage of this plan is that it is inexpensive, there being no outlay for feeders.

In the *Indiana Farmer*, J. K. Hubbard recommends equalising the strength of colonies in the spring, and instead of having a few very weak and the rest very strong, to bring up the weak ones by taking from the others and giving to them. He says the reason why this can be profitably done is, that giving brood to a weak colony will do more good than to have it in the strong colony. A good colony can spare a frame of brood and still keep full of bees; but if enough brood has been taken to show, in a few days, that they have materially weakened, the matter has been overdone, and it would have been better to leave them alone. A full colony will gather many times more honey than several weak ones; but, by intelligent and careful management, all colonies may be brought up to the same standard, and the good ones not materially injured.

The *American Agriculturist* says that the annual product of honey in America is 28,000,000 pounds, or half a pound a-piece to the population. In 1880 Tennessee made 2,131,000 pounds; New York, 2,089,000; Ohio, 1,627,000; North Carolina, 1,501,000; Kentucky, 1,500,565; and seven other States—Arkansas, Georgia, Illinois, Iowa, Michigan, Pennsylvania, and Virginia—produced more than 1,000,000 pounds each: altogether in the states named more than half the entire product of the country.

In the *Revue International*, Dr. A. de Planta says that cane sugar which we give our bees is transformed in their stomachs, atom by atom, into two substances, namely, levulose and dextrose; the bee has, therefore, always the advantage of the combination of the two substances. It is the same with honey and nectar which contain two substances, therefore the bee does not nourish itself exclusively on either the one or the other.

In the *American Apiculturist*, H. Alley says: It was claimed that by reversing the frames at the proper time the bees would remove the honey stored in the brood-combs to the sections above, the change to be made just before the close of the honey season. Experience has proved that such claims were premature, and also that there is no great advantage in reversing the combs for such a purpose. He finds it a great advantage to reverse the brood-nest in order to have the combs fastened on all sides of the frame. Bees will not build the combs down within about half an inch of the bottom bar. Now, if this space be filled, it is plain to any one that there will be many more cells in the brood-chamber than will be utilised either for brood or for storing honey. This item is no small affair when there are eight frames, 17 inches long, used in a hive. The brood capacity, by reversing, would be increased 136 cubic inches, and as there are 52 cells to a square inch, you will see that the difference between having the frames filled solid with comb or left as the bees naturally leave them is 7072 cells for eight frames. When the frames are filled with comb and fastened on all sides, as they are sure to be if reversed, they may be handled with much less danger of breaking. This is a great advantage when the apiary is run for extracted honey.

[We accomplish the same, without inverting, in wired frames by filling the frames with foundation, and when not wired by cutting the combs from the attachments at top and sides, and allowing them to drop on to the bottom bar, keeping them in place by a couple of pieces of tape until fastened.—Ed.]

LANGSTROTH FUND.

The following additional subscriptions have been received, with thanks:—

	£.	s.	d.
A Scotchman	1	1	0
T. F. L.	0	10	0
C. P.	0	5	0
C. H. W.	0	5	0
Henry Dobbie	0	2	6
C. J. S., Fleet	0	2	6

CANADA.

Owing to the peculiar spring it has been difficult to make any report as to the result of wintering our bees. Fruit bloom is, however, in now, and all danger from spring dwindling passed.

The poor honey season left many colonies last fall short of stores, and ignorance, carelessness, and in a few instances circumstances over which the bee-keeper has had no control, have given us many cases of loss from starvation. Otherwise, despite the somewhat severe winter bees were in good condition early in spring. The cold and backward season has very much increased the percentage of loss and spring dwindling and robbing frequent. There are not as many bees for sale this spring as in the spring of 1887. Prices range from $5·75 to $8 per colony.

As to the prospects for honey, nothing can be said as our honey season is brief, and during that time all depends upon the atmospheric conditions. A backward spring in my estimation is likely to be followed by a good honey season rather than a poor. The general crop obtained, however, is less, as bees are not in a condition to take advantage of the nectar secreted in the flowers.

My own bees, with few exceptions, are good, and this day, May 26, I have a good many supers on partially filled. A comb with brood is taken from the lower storey, a frame with foundation to be drawn out taking its place. The upper storey is then partially filled with the comb of brood and more frames with foundation added on. This gives the bees room, preventing swarming and utilises their energies in a satisfactory manner. It is very pleasant to have frames with foundation partly built out and fastened securely to the combs upon which to hive a swarm. Clover is less plentiful than usual, owing to the very dry summer of 1887. Canada has not suffered as much as the United States, and from clover at least we have reason to expet a greater yield. Linden has not given much surplus for several years, if there are 'off years' for it there is certainly nothing to prevent a very good honey flow from this source. Eight weeks from date will tell the tale; our surplus is secured in that time.

Canadians are under the impression that the new one-sided comb-foundation will be of no use to bee-keepers.—R. F. Holtermann, *Brantford, Canada, May 26.*

Selected Query.

[14.] *Do you recommend the contraction of the brood nest before putting the cases of sections on: if so, when, how, and to what extent should this be done? Should the sections when placed on the hive run parallel to or across the brood frames? When should cases of sections be put on? What space should be left between the top of the brood frames and the underside of sections? Is a queen-excluder or honey-board necessary to prevent the queen laying in the sections?*

The brood-nest should be contracted to eight frames, having those with the most brood in them; and the cases be put on as soon as the bees begin to build out bits of white comb at the top of the frames. They should be by preference parallel to the frames below, but if a -inch space is left under the sections it is not very material. If full sheets of *worker* foundation are used n sections, a queen-excluder is not necessary to prevent he queen laying in them; but if starters only are used he bees will build drone-comb down to the bottom, and here being little or no drone-comb in the hive below, he queen will frequently go up to lay drone-eggs; a queen-excluding honey-board should be used in this case. The sections are cleaner where one is used.—John M. Hooker.

When swarming is allowed, yes. Otherwise not. The 'when and how' depends entirely upon the district. The direction of sections is immaterial. If any space is left between bars and underside of sections it must be what has correctly been termed a 'bee-space'—barely ¼-inch, but not more than $\frac{5}{16}$-inch. The queen-excluder is decidedly unnecessary.—Samuel Simmins.

If one case of twenty-one sections only is used, frames may be contracted to seven or eight. For tiering up, I should not contract. It makes no difference whether across or parallel if hive stand *level*; if not, and hive has a dip to the front, sections must be lengthwise from front to back. Leave a bee-space of $\frac{5}{16}$-inch, or if a honey-board or excluder is used leave this space each side of it. The use of excluder is a debatable question; a properly constructed one is no doubt of advantage, but not a necessity.—John Edey.

We have proved the entire contraction of brood-frames as meddlesome; entailing as much loss as gain, all things considered, but at the time of supering, when the two outer combs contain more honey than brood, they are removed and dummies put in their place; if not, they remain, and any colony on twelve frames so treated with us has given a good surplus. Two seasons ago we proved sections running with the frames at right angles to the entrance far ahead of any other work, and, continuing on those lines, we have garnered sections of beautiful fit and finish, wrought from honey which, when extracted, will not stand competition. Section cases should be put on when the capping of honey stored in frames is being begun, just a little in advance of the colony's requirements. A colony boiling over with bees and supered in the midst of a honey flow, is certain to give fishbone work, even with starters; but if the first case is given a little in advance of such a state, and cases so tiered, by giving the new work placed below all others, then full sheets of foundation are drawn out equal to natural work, and to the greater certainty of a perfectly filled section. One quarter of an inch should always be left between the tops of frames, honey-board, or excluder, and the underside of sections. Between super work and established colonies it is more safe, if not to be desired, to place an excluder or honey-board; but with swarms we have never found need for either.—John H. Howard, *Holme, Peterborough.*

1. I should not contract the nest below nine frames, and if a fairly good colony and outside comb contained honey, I should uncap the whole of it, and place the frame in the centre of nest, when I should hope to see the bees take to the sections at once, and store the honey from the centre comb in them, premising the weather and season were right and honey coming in. 2. I have worked crates of sections both parallel and across brood-combs and have never noticed any advantage in either position. 3. When the hives are full to overflowing with bees, and when they can gather honey in sufficient quantity to store, in most districts about the first week in June, it would be detrimental to extensive ovipositing to super too early, as it would reduce the temperature of the brood-nest unless the weather should be very warm. 4. A full quarter of an inch, say $\frac{5}{16}$. 5. No, an excluder is not necessary. I do not get one section in a thousand spoilt with brood have never used any honey-boards (except the old crown-boards), do not consider them necessary in a practical apiary.—W. Woodley.

No, not necessary to contract the brood-nest when putting on sections. When placing sections on hive they should run parallel to the brood-frames, and put on when they seem to want room, three-eighths of an inch is sufficient to leave between top of frames and underside of sections. A queen-excluder under section is only a hindrance to the bees.—William McNally, *Glenluce, Scotland.*

Not necessary; but if a stock is strong and full of bees, sections being on a few days and not taken possession of, plenty of honey about, then you might force the bees up

by removing one frame and contract. I have generally worked them across, my frames being at right angles to the entrance, but it is quite immaterial. Sections should be put on when the stock is strong and plenty of honey about. Not more than a quarter of an inch should be allowed between top of frames and bottom of sections. Queen-excluder is not at all necessary, the queen seldom goes up into the sections when she has sufficient room in the brood-chamber.—WILLIAM N. GRIFFIN.

No, except stocks are not quite full when the honey flow comes on, in my experience I do not think it matters which way the sections run. When the weather is fine and warm, and honey is coming in rapidly, and stocks appear to be full enough, so that they might be glad to take advantage of the extra room offered them. A quarter of an inch. Among forty or fifty stocks last year, I did not have them go up, though I had no excluder on, the only one I put excluder on did not take well to the sections, but swarmed.—JOHN WALTON, *Honey Cott, Weston, Leamington.*

1. I do not contract the brood-nest before putting the cases of sections on. 2. I always place the sections on the hive to run parallel to the brood-frames. 3. As soon as the bees commence to draw out to their full extent the top rows of cells of the brood-combs, which will be known by the white appearance of the new comb at the top of the frames. 4. A $\frac{5}{16}$-inch space I find most suitable. 5. With separators of proper width and a $\frac{5}{16}$-inch space between the top of the brood-frames and the underside of sections, a queen-excluder or honey-board is not necessary. I have never used either, and brood in sections is unknown in working my apiary.—H. WOOD.

No; it matters little if with bee-space underneath. When hive is crowded, and bees have just commenced to elongate the top cells of combs in body box; with adepts this can be done before by noting the flowing of honey, providing plants of the neighbourhood and the condition of stocks. $\frac{1}{4}$-inch. Yes, if it is absolutely essential she does not enter. I never use any, taking my chance of such occurring, and consider that I am a gainer by the omission.—W. B. WEBSTER.

1. Unless very anxious to get a lot of sections filled quickly I would not reduce the number of frames below ten. 2. I think it is quite immaterial. 3. I know no rule beyond '*when* the honey glut comes.' 4. $\frac{1}{4}$-inch. 5. The case of a queen entering a *well-made* super is so rare (unless the brood-nest has been too much contracted) that I should never think of using queen-excluder.—W. E. BURKITT.

My object is to obtain hives full of bees by the time the honey-flow commences. A hive containing ten standard-frames, crowded with bees, will require no contraction of the brood-next. It is immaterial which way the sections range. Cases should be put on when honey begins to come in freely—when bees begin to lengthen the cells at the tops of frames by adding new wax. A bee-space of $\frac{1}{4}$-inch between frames and section case is necessary. I prefer the use of a properly constructed 'queen-excluding honey-board.'—GEORGE RAYNOR.

1. No; unless honey is desired from a certain source as fruit-blossom, for instance, which comes at a time when the majority of stocks are not particularly strong, and the nights are cold; they should be contracted to not less than eight frames, and supers placed on *before* the honey-flow. Some of the best results in my experience have been where supers have remained on during winter, through negligence. It does not signify so long as the foundation hangs perpendicularly in the section. 3. *Before* the bees need room, and *before* the honey-flow. 4. $\frac{1}{4}$-inch. 5. If the brood-nest is contracted, yes. In the early part of the season, yes. With plenty of combs below, and sections filled with worker-foundation, the queen seldom spoils the supers.—ROLAND GREEN.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Reviews, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements.)*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

IN THE HUT.

'Among the trees, where humming bees
At buds and flowers were hinging o'.'—BURNS.

[1691.] First (in answer to a recent inquirer) I must admit that by a slip of the pen I described a plumber's scraper as a right-angled triangle instead of an equilateral triangle. It was a remarkable coincidence that 'Amateur Expert' should see at that particular time a description of a similar thing in an American paper.

Speaking of American papers reminds me that I ought, in justice to our postal authorities (with whom we are, perhaps, too prone to find fault), to give them a word of praise for recently delivering a copy of *Gleanings* to a bee-keeper I have the pleasure of knowing—the paper simply bearing his name and the address, 'Crag Hill, England.' Crag Hill is not a village, it is scarcely a division of one, and is not three acres in extent. This is quite as creditable to them as a post-card finding myself with the bare initials of my name and 'I3 C. H. Sq.'

Thanks to 'A. E.' for calling our attention to Father Langstroth. It is not everybody's luck to have his book, but those who have read it have perused the most interesting book, *facile princeps*, ever written about bees and bee-keeping, at least in the opinion of 'X-Tractor;' and the rising generation who will read his book with the same veneration for its author we now feel for the early fathers in bee-keeping, will 'think shame' that they didn't give their mite when they had the chance to comfort the declining years and smooth the final footsteps of their good and great-minded ancestor in bee-keeping. We hope he is not

'Whom the gods desire,'

and that many years may pass before that noble intellect be touched.

I see one of your correspondents has also honoured *you*, as well as your excellent contemporary, *The Record*, with an account of his successful manipulation of bees in a chimney. This is scarcely 'good form,' I think. Each paper would probably thank him for a *different* communiqué, but neither, I trow, for a simultaneous *verbatim* letter.

At sowing time I intend to try the plan of asking one or two farmers in my neighbourhood to sow some white clover amongst their other seeds, and I will give them the seed on condition that they let it stop a week when in full bloom instead of doing as they do now—cut it just when we want it. Their object in cutting clover fields so soon is that it so readily casts its seed after being fertilised by the bees, thus lightening the weight yield per acre. If clover stops uncut till the head withers, the seed falls to the ground instead of adding weight and nutriment to the hay-crop.

I have never tried it, but I think a good non-alcoholic drink, with plenty of fizz in it, would be made by substituting honey for treacle or sugar in the making of herb, horehound, balm, ginger, or treacle-beer.

What a pleasant sight it is for a bee-keeper when

travelling to pass slowly through a village, and from the railway carriage window see a swarm on an apple-tree, bee-keepers at hand preparing to hive the bees, under the gaze of the usual interested villagers. Such was my luck about three weeks ago when riding somewhere near Nuneaton; and the happy sight took my mind back to the 'The Hut' and its surroundings. By the way, how *very near* the uninitiated will come when one is hiving a swarm! I suppose it is on the principle that—

'He laughs at scars who never felt a wound.

X-TRACTOR.

HONEY YIELD. (P. 295.)

[1692.] In reference (1677) to one of cottager's observations, I feel someone ought to reply, viz., 'Do we get as a rule an all-round average statement as to honey yield?'

I turn to the issue of *Bee Journal* of May 10, p. 241, paragraph headed 'Modern bee-keeping, progress in bee-keeping,' and he asks, 'Why is it the army of bee-keepers is so small?' The reason, I think, is because many begin from reading false glowing accounts, and failing to get the results promised, give bee-keeping up in disgust. He says no bee-keeper in a favoured part of the country now-a-days is content with less than 100 pounds of honey per hive, and even in the suburbs of London as much as 40 or 50 pounds per hive may be realised, and that there is little time or trouble necessary to attend the bees or take the honey, and that when taken there is little trouble to dispose of it at one shilling per pound.

Now what are the facts in our county, Middlesex? By statistics in the hands of most of our Association what do we read?—

Variety in Frame Hives.	Stocks.	Swarms.	Sections.	Extracted.	Average per Hive.	
Blacks ...	260	44	1311	997	8·8	Just over 8 lb. per hive.
Italian ...	29	7	160	65	7·74	,, 7¼ lbs. ,,
Carniolan .	14	11	3	82	6·2	,, 6 lbs. ,,
Hybrid ...	131	47	824	1019	14·88	nearly 14 lbs. ,,
					35·72	Divide by four gives an average of about 8¼ lbs. per hive.
In Skeps.						
Black ...	158	51	200	100	1·89	
Italian ...	1	...	10	...	2·5	
Hybrid ...	11	...	70	...	6·33	
					10·30	Divide by three gives a little over 3¼ lbs. per hive, or a general average of 6 lbs. 10 ozs.

Now when a ordinary man reading the paragraph mentioned (taken from *Good Words* for May) and commences bee-keeping in the hopes of realising such an ideal, and after trying several years with the average results of Middlesex bee-keepers, I think he will be ready to give it up in despair, and if any friends should speak in his presence about starting bee-keeping, his advice will be, Don't.

Now the average take of honey per hive that I have mentioned (6 lbs. 10 ozs.) is from stocks. Now if we add to the 607 stocks 160 swarms, making a total of 667, the average take then would be about a quarter less or a little over 5 lbs. per hive.

We must also remember that this is the report from the workers (I don't know what the average would be if the drone bee-keepers were included), members of the Association, men most advanced in the knowledge and art of bee-keeping. Now I think if we could go back, say, 100 years, I do not think we should have much to boast of.

Last year, 1887, was a very bad year, but I have hopes of better results this year. I have commenced to take a few very nice sections, and as I wanted some extracted honey for customers I took from very nice sealed frames 18 lbs. from two hives; trusting we may get 40 or 50 lbs. per hive this year.—ALEX. MITCHELL

Hillingdon, June 15th.

BRITISH-MADE COMB-FOUNDATION. (1684.)

[1693.] Mr. Stokes takes exception to my remarks respecting Dadant's comb-foundation (page 294). I am sure nothing could be farther from my thoughts than that anything I wrote should injure those British manufacturers who make a genuine article. I repeat that this foundation surpasses, so far as I am a judge, anything I have seen, and I said, '*I hope your readers will try it against some other makers' and report to the* Journal *which they prefer.*' I think Mr. Stokes cannot say that there was anything prejudicial to the British manufacturer in my suggestion. Indeed Mr. Stokes himself suggests that we should try Dadant's foundation against one maker, whom he mentions, and whom he is ready to back.

I have had some opportunities of seeing foundation of most of the makers at the shows, where I have acted as one of the judges. I have also from the introduction of comb-foundation used a considerable quantity myself. Some years ago I had some from Mr. Raitt, and I was quite satisfied with it. I have more recently used that made by Messrs. Abbott and also by Messrs. Neighbour, with which I had no fault to find. There are several others who make equally good foundation, and who would, no doubt, be willing that their manufacture should be tried against that of Messrs. Dadant or any other American makers. There have, however, been many complaints of failure made to me when speaking on the subject. I have had some curious experience with comb-foundation of British manufacture of other makers than those above referred to. In one case I fixed some foundation in a square super four inches deep, that had slides similar to the Stewarton supers. This was put on a strong colony in the height of the season, and the bees did not work it out at all that year. The following year I put this super on another colony (not knowing that there was anything wrong with it), the bees being crowded for space went into it at once, and soon filled the super with entirely new combs, they built between the strips of foundation, which were used as separators, and had not been altered in the least from the time they were put in. This foundation I brought home from one of the shows, it was well made, but had the appearance of having been bleached almost white. This was some years ago, before foundation was in such general use, and so much was known about it. White is an unnatural colour for either thin or thick foundation, should be avoided, and looked upon with considerable suspicion. I have also been greatly annoyed with other makes breaking down, leaving about an inch or so in depth fixed in the saw-cut, and becoming fastened together in a mass in the bottom of the hives. A week or ten days' work of the bees after swarming was entirely thrown away, to say nothing of my disappointment at such a catastrophe, loss of the value of the foundation, and the time and trouble of fixing a second lot, and putting the hive in order for another start.

Some foundation shown at one of the exhibitions last year, when examined by the judges, was thought to have a peculiar smell. A sample of this was sent to Mr. Otto Hehner for analysis, he pronounced it to be *commercially pure:* in a letter accompanying his report, he said it contained a small percentage of fatty matter.

On my return I gave a piece of foundation, similar to that sent to Mr. Hehner, to my little boy ten years old, and asked him what it smelt of, and he said, '*Candles.*'

With this experience I think that you will see that I ought not to be criticised too severely for recommending a comb-foundation which I believed to be not only 'commercially,' but *absolutely pure*. The bees are not bad judges of pure beeswax comb-foundation.

It is, I am afraid, too much the case when purchasing beeswax to select a few pieces from the bulk to send to the analyst (what would be known in Mincing Lane as *parlour samples*). If this is found to be genuine it is no guarantee as to the purity of the whole, and before we can say '*pure*,' or '*pure analysed comb foundation*,' the whole must be melted down in large quantities, and a sample from each melting submitted for analysis.

The above was written before I had seen your reply to the inquiries of T. Davison or that of E. G. Elliot: '*Adulterated foundation*.' I quite agree with you that beeswax in its natural state, such as the bees love to work it in, is not white, but yellow, although by exposure to the light of the sun it will, after a time, be bleached white without any addition or adulteration; but its whole nature seems to be altered, it is no longer soft and easily moulded—as the bees like it—but is hard and more brittle. Let anyone take a section that has been exposed until the foundation is bleached white, and take one filled with recently-made foundation of the natural colour, and see which will be filled first. There is, I believe, as you say, a *large quantity of spurious foundation being sold* at the present time; and although white wax *may* be pure, it is not suitable for foundation, and is the colour of Japanese wax, and of wax otherwise adulterated. The time and labour occupied in bleaching are considerable, and it is not likely that anyone would take the trouble for the purpose of foundation.

It is in the interest of bee-keepers and for *the advancement of bee-culture* that I write. At the same time I hope British manufacturers will be put on their mettle, and take more care in the selection of wax, that they may compete successfully with all the world in comb-foundation.—John M. Hooker.

ADULTERATION.

[1694.] As I have always vigorously fought against the adulteration of honey and wax, and indeed, I believe, was the first to publicly denounce those who brought adulterated honey and wax into the market, you will not suspect me of any lurking sympathy with sophisticators, when I protest against the statement made in your reply to Mr. T. Davison concerning adulterated foundation. Pure white bees-wax is *not* an unknown substance, and bees-wax *can* readily, without foreign admixture, be bleached so as to be white to all intents and purposes. By the action of sunlight, by that of peroxide of hydrogen, or by bichromate of potash, the yellow colour natural to wax can be removed without bringing into the product any admixture foreign to it. These bleaching processes are practised on a very large scale, and there is no difficulty whatever to procure unlimited quantities of pure bleached bees-wax, the highest authority in the *Materia Medica*, which you quote, notwithstanding.

Since my exposure some years ago, in the interest of honest dealers, of the frauds then current in the honey and wax trade, an immense improvement has taken place in the purity of honey and wax; indeed, the grosser forms of adulteration have almost disappeared. While a few years ago no dealer dreamed of getting his wax analysed, brokers and merchants now supervise that article most carefully and sell it upon the basis of careful analysis; glucose with honey has practically disappeared.

I admit that adulterated specimens of wax are still to be met with, but I think it is unfair to the trade, and to those who control it, to belittle the good results that have been produced.—Otto Hehner, *Analyst to the British Bee-keepers' Association, Hon. Secretary of the Society of Public Analysts, 11 Billter Square, London, June 21st.*

[We are fully aware of the services that Mr. Otto Hehner has rendered to the bee-keeping industry by his exposure of the once prevalent practice of adulterating honey. Yet we must be somewhat at variance with him when he says that wax can be bleached white by sunlight; we know that it can be bleached, but we have never been able to bleach it absolutely white, not only have we failed in this particular, but are supported in our assertion by very high analytical authority; 'Pereira on the Elements of Materia Medica,' says, 'White wax (*cera alba, cera dealbatum*) is yellowish white. I have never met with pure wax perfectly white. The circular cakes of commerce always contain spermaceti which dealers add to improve the colour.' We must own that we have never treated wax with peroxide of hydrogen or bichromate of potash; these must be quite recent introductions, as we cannot find any allusion to them in works of high authority. We had some samples handed to us of what was called white wax bleached by a new process; it might have been the above. We might term it commercially white, as some wax is called 'commercially pure,' though impure. From the treatment it had been subjected to there had been imparted to it an element of rancidity which detracted from its purity as an article to be used as a food, as foundation in a section is so used, and anything but fragrant to the smell: can such wax be called pure? We assert it cannot any more than putrid water can be called pure water.

In the early part of the present year a sample of wax was forwarded to us for our opinion on its merits for foundation purposes. We were obliged to speak unfavourably of it. We were not aware whose wax we had been testing. But the manufacturer of it was, and forwarded us a justificatory letter from the wax-merchants from whom it had been purchased, from which we make the following extract: 'The wax you have had belongs to a brand which Mr. Hehner has analysed and pronounced to be pure, but at the same time the wax has some properties which render it *unfit for foundation purposes* unless when mixed with a considerable proportion of natural yellow wax. It seems to us *suspiciously white*, and we are of opinion that it derives its peculiar smell from the bleaching process.' We were of the same opinion. At the same time we feel it our duty, as it is a pleasure, to speak favourably of the general purity of the wax in the market.—Ed.]

NOTES ON CURRENT TOPICS.

[1695.] I fear I am so far behind that I can never make up my lost 'bee' way, but I desire, before I begin to criticise some little matters which have appeared lately, to thank the writer of 'Useful Hints' for the excellent practical suggestions he has given lately—nothing could be better.

Four Bee-way Sections.—These are an abomination to all who have to handle them when filled.

Super Foundation.—Like Mr. Hooker, I have found the Dadant foundation very good, but the Van Deusen 'flat-bottomed' is thinner and easier put in with the Parker machine when the weather is cold, which it always has been this year. Neighbour's flat-bottomed super foundation is alike excellent; but I have found none equal to Mr. Howard's natural based; it is very thin and good in every way—his method of fixing full sheets of it in sections leaves nothing to be desired. I am sorry to learn there is so much adulterated stuff in the market. No one knows better than I do the annoyance of having this rubbish give way just when it is worked out.—F. Boyes.

Echoes from the Hives.

North Leicestershire, June 23rd.—Previous fortnight very cold; highest readings of thermometer 52°, generally below 50°; cold north-east winds, great dearth of nectar, clover and beans not yet in bloom; bees starving, driving out drones and carrying out drone-grub; supers off and feeders on.

Newport, Isle of Wight, June 24th.—Some would think, situated so far south as this is, that one would get an early flow of honey; and as this is my first year with bees in box-hives I have kept a sharp look-out for the honey-flow. But up to Thursday last, the 21st, there had been very little brought in, but on Saturday, June 23rd, I could see the honey-harvest had begun, for as soon as the young bees leave the cells in the top box the workers fill it up with honey, but have not sealed it down yet. I don't suppose they will until all the brood is out. Bees are pulling out section-foundation beautifully. About the glass sections I saw mentioned in your valuable paper some few weeks ago, I, having a diamond, started to make a crate of them, $2 \times 1\frac{3}{4}$ inch bottom piece, and also glass dividers, which I made in one piece, resting on three-eighth inch strips at each side, sixteen on glass. I think they will look very pretty if they fill well. I tried cement to hold the glass together, but found small strips of calico (as recommended) wet on one side with glue the best. I have an abundance of drones in all my hives. What is the inference to draw from that? In conclusion, permit me to thank Mr. Bonner-Chambers for the idea of the glass-section. —J. A. A. Wood.

Ascott, Oxford, June 25.—Bees have gathered no honey here since June 4, owing to north-east winds. The thermometer has kept usually at about 50° to 55°. Previous to that date a few sections were made. In the meantime, the season is quickly slipping away from us, and I fear it will be a poor yield of surplus honey. I had seven stocks last season, and my best hive yielded seventy-four 1-lb. sections. Another of my hives, besides giving thirty 1-lb. sections, gave a swarm which I first put into a box. It weighed eighty lbs. nett on August 1. I had also three other swarms which I hived in the usual way, but as I wanted surplus honey and *not increase*, I threw each of them out on to a table just before dark, sorted them out with a goose-wing, found the queens, and put them back in their hives again, putting under an extra super in each case. I cannot think why hive-makers do not always send an extra super with their hives—charging, of course, a little more. No hive is, I think, complete without two or three super crates of sections. If the beginner has only one super, he is obliged if the honey is coming in freely to take out some sections every other day—crushing many bees, disturbing most of them, and getting much stung over it. And even then they will probably swarm. A super should be placed on the hives May 1, and be carefully wrapped up. When it is half full an empty crate of sections should be placed beneath it. This is the only way, as far as my experience goes, to stop swarming. I usually keep my unfinished sections instead of extracting them and put them over the bees, as mentioned before, on May 1. The honey, if the season is backward (which it generally is here), helps the bees, and I always find them take to the supers better for it. It seems to teach them why the supers are put on!—Amateur.

Beverley, June 22nd.—It is I believe ten years since we had such a wretchedly cold season (so far) for our bees. Here we are on the 22nd June, and the weather has been all along, and is, colder than Christmas, with scarcely a bee on the wing, and every hive thrusting out and killing drones, as well as drawing brood and ejecting the white over shells. The early part of the season gave great promise, and the bees, which were in good strength, stored abundantly from the gooseberry and currant trees. Then came the fruit-blossoms and the (best of all trees) sycamores, covered with bloom; but, alas! the bitterly cold N.E. wind prevented the bees from getting it, except on one or two occasions. Last year I had hundreds of sections filled and sealed from these sources. Next came the whitethorn (May), but it, too, has passed away almost unvisited. The worst part of it has been that we have had occasional glimpses of sunshine, which tempted the bees out; then the sun suddenly disappeared, and the cold wind chilled the bees by thousands even whilst they were on the flowers. I verily believe my hives are weaker now than in the middle of May.—F. Boyes.

Co. Wexford.—Weather most unfavourable for bees since June came in; storm after storm. Skeppists are getting *small* swarms all round, but bar-frame hive bees are working in supers, building out foundation, &c. Little or no honey coming in up to date (16th June, 1888), but a nasty east wind on.—T. E.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

C. Coventry.—*Transferring Bees.*—Cut the tapes when you find the combs are nicely fastened. Pass a *warm* sharp knife between combs five and six, gently press them up into position, and slip pieces of wire over top bar bent, so that they hold the comb on both sides in position under the top bar, try the same plan with seven and eight. The knife will work easier if placed in a jug of hot water to warm. In about a week notice whether the queen-cell is sealed, also whether there are any eggs or newly-hatched grubs. If you find either eggs or very small grubs, cut out the queen-cell. If not, you may conclude the old queen is dead, and you may then allow the cell to remain. Ask any further question you may find necessary. We regret we were not present to help you.

Apis Hibernicus.—*Receipe for Metheglin.*—We select the following from a number of recipes for making metheglin: 'Select "combs" free from brood that have had the honey drained from them; place the combs in a vessel, and put as much lukewarm water on them as will enable them to swim; let them stand two days and stir occasionally; strain the liquor; let stand one day; skim the scum from the liquor carefully, and filter the sediment; when clear, boil an hour. The liquor will be sufficiently strong if an egg will float in it. To three gallons of the liquor add 1 lb. raisins, 1 oz. ginger, and seven or eight laurel-leaves. When cool, add a little brewer's barm, and after standing a day, barrel it, leaving the barrel open for a few days to work, then cork it up and let it stand for some months before bottling it.—Thomas Bagshaw.'

Enquirer.—*Putting on Crates.*—Do neither; lift the full one off, and put a crate filled with empty sections underneath. Any difference in size may be adjusted by using strips of enamel cloth. You need not mind about a strip of wood to separate the crates; allowance is made underneath in making the crate for a bee-space.

A. H.—*Drone-eggs.*—The bee turned out on the successful introduction of the new and fertilised queen was the former reigning sovereign, who probably was produced in the previous autumn, and had not been fertilised: hence the drone-eggs in your hive.

INVICTA.—*Suspicious Wax.*—It is not desirable to insert your letter. The sample sent, though unfit for foundation, may not be a fair specimen of the foundation generally sold by the dealer named. Attention has been drawn to the adulterated wax now in the market, and the notice may produce a good effect.

T. MORRISON.—*Queen cast out.*—It is not probable that your swarm is queenless. The queen you sent is a fine young one, and is, we should think, one of two which accompanied the cast.

C. N. PARKIN.—*Busy Bees.*—No doubt your bees are very strong, and are busily working and readily getting honey from some convenient neighbouring source.

ARS.—*Treatment of Swarms.*—As you are unable to move the old hive from its position, you clearly cannot take advantage of the method you refer to. As the swarm is likely to be a large one, we should not hesitate to put it in a new position, and treat it in the manner you propose, with starters about one and a half inch deep, using your excluder-zinc on the top of the frames and under the crate of sections, which should have full sheets of foundation fixed. No doubt you will obtain some well-filled sections this season.

X. Y. Z.—*Clover Honey.*—After the refreshing rains we have had, it is more than probable that the white clover will spring up again after the hay is carried and yield some honey. In most districts the white clover is only just in bloom, and there are few places where other sources of honey are not accessible for the next six weeks or two months.

EAST KENT.—*Queen-rearing.*—It is feasible to raise queens after the lime-honey harvest. The methods of queen-rearing have frequently been set forth in the pages of the *Journal*, and we must request you to refer to them for details.

No. 1 Glanrafon, Bangor, N.W., writes us that having Saturday afternoon at liberty, he would be pleased to assist and exchange opinions with bee-keepers in N. Wales on apiculture. Will bee-keepers in the district therefore be kind enough to communicate with him?

A GOOD SWARM.—The Rev. C. C. James, of Papworth, St. Agnes, hived on June 21st a swarm weighing 21½ lbs. It completely filled two large skeps, and is now in a long hive upon eighteen frames. [We should conjecture that the weight mentioned would have been arrived at by the junction of several swarms.—ED.]

Messrs. Woodley & Flood have forwarded to us a Goldman's atomiser and sprinkler. It is an American invention, which, besides being of service to bee-keepers as a spray diffuser or for spraying swarms, may be used for many domestic purposes, such as damping clothes, disinfecting sick-rooms, clothing, &c., sprinkling flowers and house-plants, &c. It will be found to be a most useful article, and all housekeepers will be pleased with it.

SHOWS TO COME.

July 9–13.—Royal Agricultural Show, Nottingham. Secretary, J. Huckle, Kings Langley. Entries closed.

July 19–20.—Cambridge Agricultural Society at Cambridge. Secretary, R. Peters, 7 Downing Street, Cambridge. Entries close June 25th.

September 5–7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 1st.

Business Directory.

HIVES AND OTHER APPLIANCES.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
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EDEY & SON, St. Neots.
GODMAN, A., St. Albans.
HOWARD, J. H., Holme, Peterborough.
HUTCHINGS, A. F., St. Mary Cray, Kent.
MEADHAM, M., Huntington, Hereford.
MEADOWS, W. P., Syston, Leicester.
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HONEY MERCHANTS.

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FOREIGN BEES AND QUEENS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
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SIMMINS, S., Rottingdean, near Brighton.

METAL ENDS.

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EDEY & SONS, St. Neots
GODMAN, A., St. Albans.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

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EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.

COMB FOUNDATION MILLS.

GODMAN, A., St. Albans.

HONEY GLASS MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BLOW, T. B., Welwyn, Herts.
PEARSON, F., Stockton Heath, Warrington.

NOTICE.

THE *British Bee Journal* is published by KENT & Co., 23 Paternoster Row, and may be obtained of all local Booksellers, and of the following Agents:—

ABBOTT, BROS., Southall, London, and Dublin.
ANDREU, F. C., Port Mahon, Minorca.
APPLETON, H. M., 256a Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
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BROWN, C., Bewdley, Worcestershire.
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OUR NOTED 1 A HIVE.

Contains all necessary Fittings,

Price **10/6**

As originally made by this Firm, and Advertised for several Seasons.

If with six sheets of Foundation in Frames, and Foundation in Sections, ready to receive a Swarm,

Price **14/6**

Too well known to need description.

Brood Foundation.
Super Foundation.
Wired Foundation.
Smokers,
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Carbolic Fumigators.
Hives, of various Patterns
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N.B.—50 Ten-Frame HIVES for Sale, quite new, 6/6, 2 for 12/-, 3 for 17/-. 40 Strong Stocks in Bar-frame Hives for Sale.

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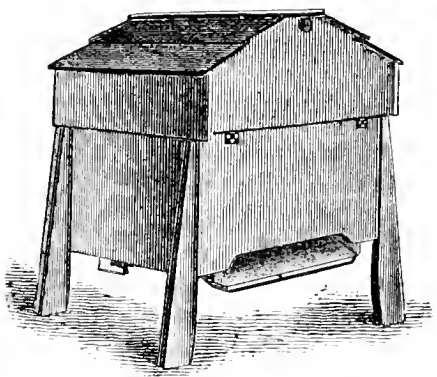
THE 'SIMPLICITY' HIVE.

Registered No. 98332.



No. 1 B. Fig. 1.

In placing this Hive before the public I venture to say that it is one of the most simple and practical yet brought out, and possesses many advantages over the ordinary Bar-frame Hive.

The Floor-board is hinged to the back of the Hive as shown in Fig. 2, and, when in position, is supported by a simple bar of wood across the centre, held in its place by two cleats. The floor-board, as will be seen, can be let down in an instant with the least possible trouble, and as quickly replaced, completely doing away with any difficulty in cleaning, &c.—a great advantage.

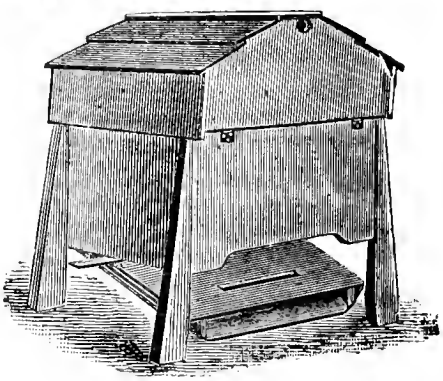


Fig. 2.

The outside walls fall 1½ ins. below the floor-board all round, thus ensuring freedom from damp, as it is absolutely impossible for rain to drive into the Hive.

The entrance to the Hive is through a slit cut in the floor-board about 4 ins. from the front wall, and the alighting board being directly underneath is protected from wind and bad weather, and is always dry. The bottom bar of the third frame from front wall hangs just over the entrance slit, thereby preventing any direct upward draught into the cluster. By means of a metal slide the entrance can be contracted in winter, or in the case of robbing.

There are no projecting pieces on the Hive, such as alighting boards, porches, &c., to get broken in transit.

Price 10/-. Fitted for a Swarm, as No. 1a, 14/-. *A reduction allowed if three or more Hives are ordered.*

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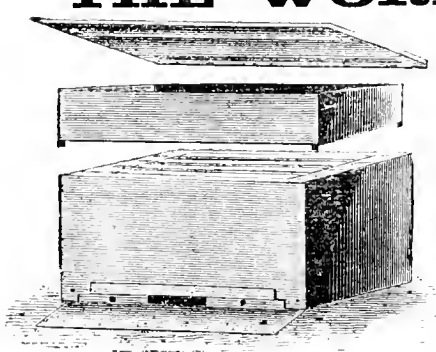

Registered No. 98331.

The Hive contains nine frames, Standard size, with metal ends; one dummy; one quilt; has a stout body made of sound red deal; is double walled, and grooved, and has a water groove down each side underneath to exclude wet. The floor-board is hinged, and can by removing two screws be let down for cleansing purposes. There are also a good landing board and two entrance contractors. **Price—Body, Frames, and Roof, 5/-.**

The rim shown between body and cover is made to drop exactly on to the body, and is kept in position by a block at each corner. It is for the purpose of carrying a section crate of twenty-one 1-lb. sections, and thus the whole form a complete and compact Hive. The rim and section crate can be had for 2/6 extra, making the complete Hive 7/6. Six of the frames can be fitted with half sheets of brood foundation for 1/-.

Customers buying the above Hive at 5/-, can at any time obtain the rim and super when wishing to raise section. They are all made to a size, and a fit is guaranteed.

THE BRITISH BEE JOURNAL

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	£	s.	d.
H. Jonas	1	0	0
T. Greenhalgh	0	5	0
A. E.	0	2	6

PRACTICAL WORK IN THE APIARY.

MAKING ARTIFICIAL SWARMS.

Although swarms may be made artificially from ordinary hives, the modern moveable-comb system presents far greater facilities for the multiplication of stocks in this way. So easy is it to make artificial swarms that many have ruined their apiaries by dividing up their colonies too much. We must bear in mind that multiplication of colonies means the division of each individual colony, and if carried too far only causes weakness. Beginners frequently err in this respect, and we would recommend them not to take more than one swarm from a hive in one season until they have thoroughly mastered the practical part of bee-keeping.

The bee-keeper who relies on natural swarming frequently permits his bees to lose much time whilst the swarming fever is on them, during which time little work is done. This loss of time he can prevent by making an artificial swarm. The best time for artificial swarming is when honey is abundant, the hive crowded with bees, drones are flying, and the weather fine. It is generally recommended to make swarms as early as possible, and when an apiary is being started it would be convenient to have early swarms, but many are induced to make them before the colonies are in a fit condition, to the detriment of both colony and swarm. We would rather make our swarms towards the end of the great honey-flow (in the south about the end of June or beginning of July) than too early in the season.

There are various ways of making artificial swarms in moveable comb hives, and either one or more hives may be utilised in the formation of the swarm, depending upon the rate of increase desired. One colony may be divided into two in the following way:—Open the hive in the middle of a fine warm day, find the queen, transfer the comb on which she is found to a new hive, and place this on the old stand; fill up the hive with frames of empty comb or comb-foundation. The old hive should be moved to a new stand, and a frame of comb placed at the side of brood-nest in place of the one taken out, or if the bees are very much reduced in numbers, push up the division-board and do not insert the other frame. This hive will be without a queen, and can be allowed to raise its own queen or may have a ripe queen-cell inserted, which would save the bees much time.

Stocks do but little work, and necessarily go backward whilst without a queen, hence the advisability of enabling them to obtain one as soon as possible after making the swarm. As we have removed a frame containing brood and young bees, with the queen, and placed it on the old stand, all bees on the wing gathering will return to the old spot, and finding the old queen there will set to work like a natural swarm. This method is good, and is the only way to make a swarm when the bee-keeper has not more than one hive, but it should be only adopted if the hive is *very* strong. When the bee-keeper has a number of hives, and does not desire a very rapid increase, or if his hives are not very strong, it is always better to make a swarm from two or more stocks, so that little is taken out of each. We can make a swarm from two hives by taking the queen with a frame of brood from one hive, and, instead of moving this last to a new position, a second hive is moved from its stand and taken to a new position, while the original hive, from which the queen was taken, is placed on the stand of the second hive. Of course, as in the first plan, the hive containing the comb with queen upon it takes the place of the hive from which she was taken. The original hive without the queen is strengthened by the returning bees of the second hive, and can be further assisted by the insertion of a ripe queen-cell or fertile queen.

The bee-keeper who expects to rely on artificial swarming should have a nursery for furnishing queen-cells, and these, it must be borne in mind, cannot be had at a moment's notice, but can only be obtained when a stock has been for some days deprived of a queen, either by removing her for this purpose or by natural or artificial swarming. Should a natural swarm issue, artificial swarming can be begun a few days afterwards, as there will be a number of queen-cells found in the hive from which the swarms left. If queen-cells are wanted, the usual way is to artificially swarm the best stock in the apiary, and after ascertaining the number of good queen-cells on the seventh or eighth day to make as many artificial swarms as there are queen-cells available. After the lapse of twenty-four hours give one queen-cell to each stock swarmed, leaving one in the hive in which they were raised. In removing and inserting

queen-cells precaution should be taken to use only good, well-developed cells; do not allow them to get chilled or leave them exposed to the sun, and be careful not to injure them by pressure. Combs containing queen-cells should not be shaken, but the bees carefully brushed off. The cells can then be cut out with a piece of comb attached to them above. We always place our cells between the combs near the top bar of frame, point downwards, and run a pin through the cells attached to the queen-cells, thus securing it to the comb. We, however, generally give a fertile queen, as we prefer this to inserting queen-cells in artificial swarming.

A GENTLE BEE-MASTER.

'O blaw, ye westlin winds, blaw saft
Amang the leafy trees:
Wi' gentle gale, frae muir and dale,
Bring hame the laden bees.' Burns.

Who amongst bee-keepers has not made the acquaintance of this great man in our midst—the Rev. George Raynor, either personally or by means of that curious method of friendship-growth so often misleading us by giving a false idea of the personal appearance always figured in the mind's eye by the imagination? I allude to the growing acquaintance we form with a writer whose works we regularly read.

Hazeleigh Rectory, the residence of the Rev. Geo. Raynor, stands on the summit of a hill some three miles from Maldon, in the marches of East Anglia, rich in recollections of the Herewards and Harolds who long held the Essex lands against the Normans. The tidal Blackwater comes in from the seas and winds in and out amongst the fat pastures and marsh lands as if it were difficult for it to force its way into an ocean for ever struggling to stem it back; so it sweeps its great arms about in the low-lying lands (the birthplace of mists), and looks, in fold after fold, almost like the open sea. Indeed, from the hill-top we have an immense sweep of pastoral scenery, which readily lends itself to the idea that the horizon is the broad expansive deep.

When the three of us (Mr. W. H. Harris, provincial secretary of the Middlesex B.K.A., 'The Sage,' and 'X-Tractor') arrived in Maldon, we found the courtesy of Mr. Raynor had gone before us, for a carriage was in waiting to drive us on this hot June day—the first of summer—through lines of scenery perfectly typical of rural, rustic England; along hedge-bound lanes, rich in dank and lank herbage, gay with large wild roses covering, here and there, the briars with unusually rich coloured flowers, and all the glorious wild flowers of a backward season, rushing into bloom as if they were afraid of being too late to fulfil their mission.

These things gave us opportunity for airing our somewhat mildewed botanical nomenclature, which I dare say was the better for the change of climate. From a bee-keeper's point of view, the only things noticeable on the ride were an absence of white clover, but plenty of beans and vetches. Yes, more, we passed a solitary hive in a cottage garden(and oh, how *very* lonely looks a single hive!)

A young country lad was ready for us at the gate, and if there had been a doubt as to the house we wanted, it would have been settled by the sight of the veil he wore—'Salve' was turned into 'Vale.' A bright-red brick house, nearly covered by vivid green ivy (always at its best in June), gave us an agreeable harmonious colour contrast, and called to mind the golden ochre of the lichen-covered farm-buildings we passed on the way, lending richness of hue to the slaty greys and purples of their old timbers.

Entering the Rectory by a brick porch, in the inside of which was ivy growing, we soon received a 'bee-keeper's welcome,' and presently were deep in various moot points and queries in bee-keeping. It is no treat to have an interview with one who is an old bee-keeper and nothing but an old bee-keeper (patience!), indeed it is often an encounter with an individual whose only redeeming point is venerable age, coupled with porcine obtuseness; but what a real feast it is to have a long quiet time of it—oh, how short withal!—with an advanced bee-keeper who has lived with the front rank for half a century, who has tried and rejected more bee-fads than, perhaps, any man in the country, only retaining such as have sterling merit—with a fearless and fair judge who hesitates neither to condemn nor praise. For an appliance to bear his name, if it has the stamp of his approval, is in itself a warranty of excellence; thus we have the Raynor queen-cage, divisional super, extractor, feeder, and so on.

Readers of the *B. B. J.* have a literary acquaintance with Mr. Raynor far more intimate than many of them imagine, and the influence of his writings must be a powerful factor in forming the character (so far as regards bee-keeping) of the rising generation of bee-keepers, if, as I believe, continued familiarity with the mind-children of a writer impregnates the reader with some of his own mental characteristics, just as the Swiss clergyman who learnt our language by the sole aid of Shakespeare and a dictionary spoke English in the bard's own majestic periods.

I am quite sure of one thing: the ranks of bee-keeping as it is found to-day can well do with an infusion of some of that quiet, calm, benevolent geniality which is characteristic of the Rev. Geo. Raynor, and is known to all to be coupled with much gentle courtesy.

I had not long to be in the apiary of Hazeleigh before the conviction forced itself upon me that the breeds of bees there were not near so 'tame' as those at home, though these be crossed with Cyprian blood, the devilry of which we seem to have bred out.

Amongst other things Mr. Raynor must own the paternity of the carbolised cloth as a subjugator, and we insisted on seeing this used in all its simplicity, without accompaniment of smoke, for our own individual experiments left us in a hiatus of doubt. Well, three sceptics came; three converts left. A square sheet of serine, or tiffany (open meshed canvas), the size of a quilt, was wrung through a solution of carbolic acid; and as the quilt of a hive was rapidly ripped off, the carbolised cloth was suddenly put in place of it, when the terrified, trembling bees rushed to hide their heads

'Anywhere! anywhere
Out of the smell,'

and were soon as quiet as mice.

All the hives (about fifty) are on the right-angled system of hanging frames, and are within eases or houses which keep all right in winter, and assist in summer shading. Although 'X-Tractor' is a sworn foe to this system, he is compelled to admit that the hives were easily manipulated. Porches were conspicuous by their absence.

After having been taken into the manipulating shed, and shown the latest modes of fixing foundation in frames and sections, we were led to a natural swarm, which had been taken (just before our arrival) out of as awkward and thick a quickset hedge one can well imagine. By the aid of a carbolised feather they were hurried up into the skep in exactly one and a half minutes.

I need not describe the fruit-garden, filled with just the shade and protection from wind the most fastidious bee-master could desire. In one place was a nice patch of the perennial (so-called Chapman honey-plant) *Echinops sphærocephalus*. And then—*eheu fugaces!*—we must go from our kind friends in the bee-keepers' paradise on the broad flats of Essex, with their swallows' nests under their porch; in their parish, whose bounds

are beaten daily by their own bees' flight. We must return to that immense sweltering hive which never swarms, because, I suppose, foundations are drawn out into cells 'in anticipation of the insects' requirements.'

Is it not necessary there should be 'a fly in the ointment,' a cloud, in order that we may enjoy the sunshine? Is it not fitting that a tinge of gloom should mar our pleasure? This was not wanting then, for as we drove to the railway station, our driver pointed out a thatched cottage which had been burnt literally to the ground, leaving nothing standing but two chimneys as monuments of the late inmate, who, with his three children, were recently burnt to death. A bent iron bedstead amongst some burnt brick told a mute, sad tale.

So we returned to London, Mr. Harris a prince of *raconteurs*, 'The Sage' a sapient critic, and the inveterate smoker—X-Tractor.

USEFUL HINTS.

Weather.—Throughout the third week in June cold northerly winds prevailed, and during the nights the temperature sank nearly to freezing point. On the 20th and 21st of June our study fire was burning cheerily all day long, and was as much enjoyed as on a cold winter's day. On Sunday, the 24th, and two following days, so great was the change that the thermometer in our bee-house—under the shade of trees be it noted—registered 90° Fahr., and the bees evacuated their hives and clustered outside to preserve their combs from melting. Some colonies swarmed, deserting sections and supers, and, after gyrating for ten or fifteen minutes, returned to their deserted storehouses, finding them cooled, we suppose, by the short evacuation. Then, during the night, came thunder-storms, with pouring rain and hail.

Afterwards, up to present date (June 30th), more threatenings of thunder, with breaks of sunshine encouraging the bees to rush afield, only to return pell-mell, laden with a little pollen and watery nectar, alarmed by the overhanging thunder-cloud. 'Still no indications of settled weather;' 'Cold showers with bright intervals.' Such are the forecasts of our meteorologists, while the summer is slipping away and our bees are gathering no honey. True, our meadows are still intact, and the white clover in full bloom, but secreting little nectar, and when finer weather comes the ceaseless hum of the 'mower,' simultaneously with that of our bees, will float over the flowery meads and mark its 'Ichabod' on the honey season of 1888. But the season is late, the flowers are still in bloom, the bean-fields and white clover will continue to bloom for some time after the late refreshing rains; the limes will soon be giving forth their delicious scent, and the hives are crowded to overflowing with labourers eager and longing for the harvest, if only a month's dry weather and sunshine be vouchsafed. A few more days will determine the crisis.

Carniolans.—Ament our remarks as to the true colour of these bees, Mr. Blow writes to us that—'the bees shade off (leaving the yellow bands at Trieste) to the genuine article up in the mountain valleys. I have had over 100 stocks this spring and I have not one bee that shows yellow markings.' He also refers us to his pamphlet, page 37, where he speaks of the bees around Trieste as a 'rather mixed race, being in many cases slightly striped with yellow, quite different to those I saw later on in the mountains.' He also speaks of a 'Mr. Doukoupil, residing at Radmansdorf, who possesses a large apiary of Cyprian, Syrian, Ligurian, and Carniolan bees'—all in the same apiary!—'and exports queens to America.' Notwithstanding Mr. Blow's remonstrances, this gentleman was unable to see his error. We hope he does not export queens to England! Mr. Blow's 'genuine article,' then, in Carniolans, is a bee entirely free from yellow markings. Let us adhere to this, and endeavour to keep the 'genuine article' pure. The Carniolan colony, of which we spoke in our last 'Hints,' continues crowded with bees in its large brood compartment and supers, utilising every moment of sunshine as energetically as Cyprians, but shows no inclination to swarming, although its neighbours have been indulging the swarming instinct. So gentle, beautiful, prolific, and hard-working, is the Carniolan race, that we sometimes feel inclined to wish that our entire apiary consisted of it and none other.

A Toad Story.—Our apiary adjoins a meadow, still unmown, which abounds in toads, a wire fence alone separating the two. Late in the summer evenings toads may be seen crawling around the hives, but it never struck us that they were intent upon devouring bees. Our hives are placed on stands about eighteen inches from the ground, and in front of our strongest colonies we place a board, sloping from the ground upwards to the hive-entrance, for the convenience of heavily laden bees returning homewards. While lazily watching beside an Italian colony thus provided a few mornings ago after a heavy shower, admiring the eagerness of the bees for work while the brief sunshine lasted, a toad appeared on the scene, and most deliberately, step by step, crawled up the board to the entrance, and there took up his station, surrounded by departing and returning bees. Flies occasionally settled on the creature's back, but were dismissed *instanter* by a quick motion of its hinder claws. Several bees of inquiring minds were similarly treated also. At length one, more inquisitive than its fellows, carefully and minutely examined the fore-paw of the toad, but, alas! as it arose on wing from the scrutiny, snap went the huge jaw of the toad, and poor bee disappeared down the capacious throat. All this was done quick as a flash of lightning, indeed, so quick that the eye could scarcely follow the motion. The operation was repeated again and again by the toad, till at last, realising that the *Toad* might prove more destructive of bee-life than the *Tit*, we interfered, and tying the toad securely in the position it had voluntarily assumed, we applied to the hive sundry kicks and shakes, with the object of infuriating the bees to attack their assailant. But no, although thousands of angry bees surrounded the marauder, not one dared to attack, not a single lance was unsheathed! So great seemed the dread of the bees that not one alighted upon the toad, notwithstanding its struggles to free itself from the bands by which it was bound. Following Virgil's advice respecting a 'bad king'—*dede neci*—we beheaded and dissected the toad, and discovered in his capacious maw thirteen of our beautiful Italian bees, which had all been swallowed alive during less time than it has taken us to write the story. Moral: Don't place boards in front of your hives for the convenience of the bees (toads?), and don't adopt the American plan of placing your hives upon the ground. Why cannot toads content themselves by picking up the *dead* bees, as 'tits' and sparrows are *said*, by their apologists, to do? No, these and many another enemy of the bees prefer the *living* to the *dead*.

Garden Bee-plants.—*Echinops Sphærokephalos* flourishes amazingly from our sowing made March 1887, some of the plants having reached the full height of seven feet. It is not yet in bloom, but is fast approaching that stage, and we hope carefully to note the bees' visits to its blooms. *Teucrium* (Germander), a plant of the Labiate family, is greatly loved by the bees. It is very hardy, easily propagated by layers or slips, bears a pretty purple flower, and blooms through the summer. *Nepeta* (cat-mint) so highly prized in America as a bee-plant, and by many termed Ground Ivy, is very similar to the above, and is equally patronised by the bees. *Lamium* (Dead-nettle) commonly known in our northern and midland counties by the name of 'Bee-nettle,' is of four colours, purple, white, spotted, and yellow, grows wild by hedges, walls, and road sides, and is very common, but is capable of improvement by cultivation,

and is well worthy of a place in our gardens. This again is of the Labiate family, and is frequented by the bees. The yellow variety is extremely pretty. *Scrophularia* (figwort) of two kinds, purple and yellow, and *Echium* (viper's bugloss) bearing a brilliant blue flower, and well known in our cottage gardens, should both be cultivated for the sake of the bees. *Mignonette*, sown now, as well as *Limnanthes Douglasii*, will form excellent autumnal forage, the bees being very fond of both.

Trifolium.—A contemporary, the *Morning Post*, of June 22nd, makes the following interesting reference to the two kinds of trefoil or trifolium, cultivated in our fields and meadows, and from both of which the bees derive pollen and nectar in abundance:—'A noteworthy circumstance in the present season is the extraordinary abundance of the yellow suckling clover, *Trifolium minus*, in meadows and pastures. It is an excellent little forage plant, makes good bottom herbage, and where the pastures are at present being sheep-fed, it is eagerly eaten. It is only an annual, and its present abundance appears to be a result of last summer's heat and drought. In hot dry summers herbaceous plants, particularly annuals, devote their energies to the formation of flower and seed rather than of stem and leaf, hence, whilst the individual perishes, the species is preserved. Last year this was notoriously the case with *Trifolium minus*, and before the end of the summer much of the brownness of the pastures arose from the scorched remains of this little plant, whose perfectly matured seeds were scattered in large numbers upon the ground. There they rested till spring, when germination took place, and the resulting plants now form an unusually conspicuous feature in the bottom herbage. *Trifolium minus* is often confounded with a totally distinct but equally useful forage plant, *Medicago lupulina*, called trefoil by seedsmen, often termed "hop" by farmers, and frequently sown with rye-grass as a crop of "seeds." Of the two plants, *Medicago lupulina* is the more robust, its flower-head is larger, contains more florets, and is of a brighter yellow than that of *Trifolium minus*. Its seed-pods, moreover, turn black when ripe (hence the name black medick, by which the plant is likewise known), whilst those of *Trifolium minus* never do, but are enveloped in the brownish shrivelled remains of the flower.

Feeding Swarms is now more necessary than ever. While writing, on this 30th day of June, a bitterly cold north wind is blowing, and scarcely a bee is to be seen on the wing. On reference to our 'Hints' of June 24th, '86 (*B.B.J.* Vol. 14, p. 279) we find mention made of 'Midwinter in June, cold and cutting winds, disastrous prospects for the honey-harvest;' and, under the head of '*Feeding*,' the cheering remark that, 'If the strength of the stocks is thus kept up (by feeding), the small outlay will be well repaid *when* the honey-flow arrives.' Thus, it appears, we anticipated a late honey-flow. Let us then not despair now, but hope for a change of weather, and the filling of our hives and sections.

Removing Sections from the hives will, we fear, involve little labour or trouble at present, but to those happy apiarists who have, or may have, any filled and ready for removal, we advise the use of the carbolised sheet, a piece of coarse *canvas*, *strainer*, or '*cheese-cloth*,' sufficiently large to cover well the top of the section-case. Let this be steeped in carbolic solution, wrung out dry, and spread over the case, when the bees will quickly disappear, rushing downwards into their hive below. The case or rack must then be raised slightly by the leverage of wedges, and allowed to fall gently back into its place, when it may be slowly screwed round and carried into the honey-room, or any outhouse, where the sections can be removed one by one, and the few adhering bees, being brushed off with a feather, will quickly return to their hive. On removing the super, we spread the cloth over the hive to clear off the bees before placing on another case, which is generally advisable, in order that the bees may clear up the honey from the fragments of comb which remain attached to the bars of the frames. By this operation, if carefully performed, there is no danger of the sections becoming tainted with the scent of carbolic acid. The scent, being on the cloth only, is carried *upwards* by the current of warm air ascending from the hive and passing away through the canvas. On this plan we manipulate all our hives with the least possible disturbance of the bees, which, having been driven downwards by the dreaded scent, ascend to the top of the frames again immediately on the removal of carbolised cloth. The method only requires to be known and tried in order to be appreciated, and then, assuredly, the days of smoke and smokers will speedily be numbered.

Foreign.

BEE-KEEPING IN RUSSIA.

A Floating Exhibition.

Bee-keeping in Russia is making great strides. The committee of the bee department of the Imperial Society of acclimitation in Moscow is taking the most worthy and effectual steps to make known and encourage a taste for this science, particularly in the country. From a return made up by this Society it would appear that in the district commonly known as the 'Moscow Government' there are no less than 3148 agriculturists owning, among themselves, 5100 stocks of bees, and yet this district is not one of the most favourable for apiculture. Instruction in bee-keeping has been very limited in this district. Bee shows are rare and not at all within the reach of the people living in the country. It is, therefore, mostly with the object of remedying this state of things that the Committee of the Imperial Society has organized, at Mr. Nassonow's suggestion, a free, floating show, which has effectually excited the curiosity and interest of the inhabitants of the villages through which it has passed. Prince W. Dolgoroukow, the Governor-General, who was good enough to become honorary chairman of this Exhibition, and which had already been patronised by Mr. Podgorozky, President of the Committee, Professors Bogdanow, Krasnoewhow, honorary members, and other members of the bee committee. Mr. Nassonow and Mr. Krotkow, Russian ecclesiastics, have more than any other occupied themselves with the bringing together of the necessary exhibits of the show, which was brought before the public for the first time last year, when it consisted of only one ship, towed by a steamer.

Narrow as the space was on board this boat the collection of the different styles of hives left nothing to be desired. Some of these hives were stocked with bees, and there was a good assortment of diagrams and engravings explanatory of the natural history of the bee as well as an interesting collection of literature on bee-keeping. The collection contained, moreover, a complete assortment of utensils most useful and simple of construction. There was also a laboratory on board, specially fitted up for the collection and preservation of any bee flowers to be met with along the banks of the Moscow river. The deck of the ship was converted into a garden, and numerous were the choice flowers and rare plants which were to be seen among the displayed bee-hives.

The exhibition left Moscow on the 14th of July, and in the course of its journey stopped at Bromiog, Pererva, Ongrecha, Kalomenskoé, Ostrow, Mjatschkowo, Rogestweno, Markowo, and Lophjenock. Wherever it stopped visitors, about 6000 in number, gave every evidence of feeling very interested in the various articles brought under their notice, and listened with the greatest attention to all explanations given. Besides these means of familiarising the country people with bee-keeping, the

members of the exhibition gave a series of lectures in the various village school-rooms, in the course of which the best works on bee-keeping were freely recommended. For this latter purpose the Committee had printed Mr. Nassonow's book, *Des Abeilles et de la manière de les gouverner*.

Whilst staying at villages, Messrs. Nassonow and Krotkow were in the habit of visiting apiaries and giving to their proprietors, who, as a rule, were ecclesiastics, their best advice. This seed has been sown on good ground, and there is no doubt but that it will soon bear fruit. The good lessons given to these owners are certain to find their way to their friends and neighbours.

The floating show returned to Moscow in August, and it was kept open for some time afterwards for the benefit of the public; but it finally closed on the 20th of the same month. The steps taken in this direction by the Moscow Committee is sure to be of great service, and to it a considerable portion of the progress which Russian apiculture has made of late is to be attributed.—J. Grisard (*Bull. de la Société d'Acclimatation*). From *L'Apiculteur*, of Paris.

Selected Query.

[15.] *In tiering up cases of sections should a bee-space be left between cases? If so, how much? and is it best left at the top of case or at the bottom?*

A bee-way of not less than $\frac{1}{4}$ or more than $\frac{3}{8}$ of an inch should be left between the top of the sections in one case and the bottom of the section in the other, the case itself rests on the outside of the one below it, or on the hive, or honey-board excluder, if one is used. This space is best left at the bottom of the case.—John M. Hooker.

Much best without any intervening space.—Samuel Simmins.

Certainly. If a honey-board is used, leave $\frac{1}{4}$-inch between the frame tops of it, and another $\frac{1}{4}$ between it and sections, and $\frac{1}{4}$-inch between each succeeding tier. Immaterial whether top or bottom, perhaps the most convenient way is to make the case same depth as section and an additional frame to give bee-space, which frame can be used to reverse or invert crate if or when wanted.—John Edey.

Most decidedly, and not more or less than $\frac{1}{4}$-inch, always at the bottom of case.—John H. Howard, *Holme, Peterborough*.

I always work with a bee-space at bottom of crate. But as you use the term case I presume you are referring to cases holding more than one layer of sections, if so I should not allow any bee-space for two layers, between the layers, but if you refer to ordinary crates, or as some term them racks, I should allow $\frac{1}{4}$-inch full at bottom only. If more space is allowed, one often gets small pieces of comb or attachment, built between, and drones can travel into the super cases and apparently get in the way of the workers if $\frac{3}{8}$-inch space is allowed.—W. Woodley.

Yes; $\frac{1}{4}$-inch at the bottom.—Roland Green.

Yes; there should always be the usual bee-space left between cases when tiering up, three-eighths of an inch is ample, slightly less will do: and it is quite immaterial whether left at top or bottom of case. I prefer the latter.—William McNally, *Glenluce, Scotland*.

A bee-space between cases is of great advantage; should not be more than quarter of an inch. At the bottom is the best.—W. N. Griffin.

Yes; about a quarter of an inch at the bottom.—John Walton, *Honey Cott, Weston, Leamington*.

I have never had occasion to tier up, our season generally being so short.—W. E. Burkitt.

In tiering up cases of sections I always leave a $\frac{3}{16}$-inch space between bottom of top tier and top of bottom tier of sections, which should be arranged on the bottom of the case.—H. Wood.

There is no absolute necessity, but it is preferable, especially if racks are put on at all carelessly,—$\frac{1}{4}$-inch. I prefer it at bottom.—W. B. Webster.

Yes; $\frac{1}{4}$-inch. It is best left at the bottom of the case. A queen-excluding honey-board should provide a bee-space both above and below the zinc.—George Raynor.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.*' *All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts* (see 2nd page of Advertisements).

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

BEES IN MINORCA.

[1696.] I had this spring a very singular occurrence to one of my hives. The bees were already beginning to work in the sections a very little, the hive was not a *strong* hive, though a fair average one, and had gone through the winter admirably. It was the commencement of the honey-flow (about the middle of April) and, of course, the hives were humming. Gradually I began to notice a want of activity at the entrance of said hive, a lack of that *vim* so conspicuous in a well-governed colony. 'Something is the matter with No. 8,' I remarked to my son, 'we must look it over.' On the following day we examined it, finding the sections entirely abandoned, and the frames below giving every sign of the hive having lost its queen. The combs had that untidy look about them, caused by the undue prominence of the scattered drone-cells in every direction, they (especially the edges) were plentifully adorned with queen-cells, some of them of that pea-nutty appearance and colour, indicating that they simply enclosed an immature drone, and the population had dwindled.

Suspecting that some of the said queen-cells contained immature drones, we opened several of them, and the result proved our suspicions correct. We kept on tearing them open, when we were surprised to find in one of them a live queen about to hatch. Then another! What to do? We concluded to cut out all the queen and would-be queen-cells but two, and 'let her slide.' The hive is now again presided over by a young queen, the population has increased, all seems to be well—but the shock to its nervous system, caused by such a double visitation of calamities, has weakened her resources; I have not extracted a pound of surplus honey from it.

I tried 'doubling' on five of my best hives, but our spring was so late and variable, that it could not well be effected till near the commencement of the honey-flow. The hives with second-year queens, relieved of their brood-combs, did wonders. I never saw hives work better, but the young bees hatched in great numbers when the season was nearly over and too late for usefulness. Our honey-flow is too short, and we are almost every year troubled with drouth, which shortens it still more. Our queens, too, I think, are too fecund, filling again with brood the combs which should have served for surplus honey; so that during the honey-flow the

best honey was stored on the brood-combs (some twenty of them) and used in feeding so many months.

If we try again next year, I think it would be good policy to use a honey-board over the first brood-storey? I see this very generally advocated in the American press.

The Archduke of Austria, Louis Salvador, who has resided over twenty years on the neighbouring island of Mallorca, has been spending a few months among us, and was so charmed with my home-apiary that he determined to put one up on that island, where he is a very large landed proprietor. My youngest son has just returned from a tour of inspection with him.—F. C. ANDREU.

SKEPS REVERSED.

[1697.] I have long been hoping to see some reference in *B. B. J.* to this subject from those who have had experience with the Jesse Garratt's plan, especially from a friend of mine near Swindon, who was very successful with it last year; and I hope when he sees this he will give your readers his experience, which will be worth having, as he is a thoroughly experienced bee-master.

My own experience is only commencing, as last season I did not know of the plan in time. This year, on May 22nd, I reversed a very strong stock in flat skeps (carefully following Mr. J. G.'s directions), and put on eighteen 1-lb. sections, which were occupied at once. On June 2nd these were going on well, but bees so numerous, that I placed a flat glass super (Lee's old-fashioned one) holding about 22 lbs. under the sections; this, too, was at once taken possession of, since that the weather has been very unsettled (and except the May), there have been few flowers till the sainfoin came out a week ago—heavy showers have prevented much bee-work—and it is now being cut.

Yesterday, to my great disgust, this skep threw off a 6-lb. swarm—the glass super being half full and the upper one not so much advanced—this I reversed, and they are still working in the former one. I have just reversed another, the plan being so simple and inexpensive is well adapted for cottagers; and now that I am still engaged a few days in each week on my tour as 'expert,' I take an excluder adapting-board with me—to show people how to adopt the plan—and others are trying it. I trust all who have really *tested* it will give an early report.

I find all *good* stocks wonderfully strong in brood and numbers, but little honey yet, many weak stocks have been starved. Our 'Expert's tour' having been revived this year, many new members are coming in and defaulters are rejoining.—W. E. BURKITT, *Hon. Sec. and Expert, Buttermere Rectory, Hungerford, June 3.*

P.S.—I forgot to mention that my inverted skep has done far more 'super' work in the time than any of the five strong stocks in frame-hives, supered the same day.

BRITISH COMB-FOUNDATION. (1695.)

[1698.] Last week I gave some instances of the adulteration and failure of British comb-foundation. I also mentioned two or three firms from whom I had had foundation with which I was quite satisfied. I said, 'There are several others who make equally good foundation, and who would no doubt be willing that their foundation should be tried against that of Messrs. Dadant, or any other American makers.'

In my concluding remark I said, 'I hope British manufacturers will be put on their mettle,' &c. On Friday morning I received a letter from Mr. John Howard, of Holme, Peterborough, and samples of his foundation, both thick and thin, asking me to express an opinion as to its quality; the following is a copy of his letter:—

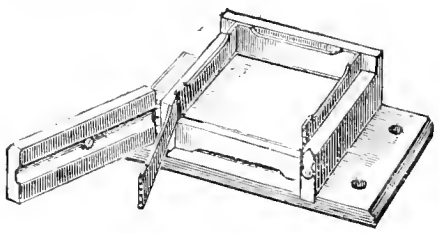
'Now here's a boy who means some day to lead in foundation-making. If British pluck cannot beat the Americans in the production of comb-foundation, at the Holme manufactory they shall be equalled, and so save the British consumer the trouble of exporting his money to other lands.

'If the British bee-keeper will leave off running after so much cheapness in this foundation direction, he would save himself much imposition. There is not competition in price alone, but in how near can some approach adulteration of the beeswax for it still to be of marketable purity, and it is this latter competition which effects a cheap production, and that bee-keepers should avoid by not running after CHEAPNESS. I send you herewith samples of my brood and super, also of Pelham super foundation. Now, I don't beg for any favours, but give your decided opinion upon the same, so that persons may avoid me or may render me that patronage my endeavours should reap.'

It is evident from this letter that Mr. John Howard *is 'on his mettle.'* He is also right in what he says about cheapness, and suitable and genuine beeswax costs nearly or quite as much in bulk as the foundation is sold for. It is very dirty as imported, and there is considerable loss in freeing it from the dirt, &c., that is in it; there is the cost of melting and the manufacture; add to this the cost of advertisements. It seems difficult to understand how, if pure, it can be sold at so low a price. Surely the old proverb as to cheap things will apply here.

With regard to the sample of foundation sent to me by Mr. Howard, it certainly was the nearest to coming up to the 'Dadant' standard of any British manufacturer that I had seen, and I at once sent for a few pounds to try against it.

Seeing Mr. F. Boyes remarks (1692) as to Mr. Howard's method of fixing full sheets of foundation in sections, I sent for one of the machines, which he calls his Foundation Fixing and Section Block, and I am



highly pleased with it and the perfect way in which comb foundation is fixed. There is no longer any necessity for the use of melted wax or Parker foundation fixer. All those who use the one piece section should procure one of them and I am sure they will never regret it.—JOHN M. HOOKER.

A SIMPLE, SAFE, AND SURE METHOD OF DESTROYING WASPS' NESTS.

[1699.] The season is near at hand when we may be on the look-out for the nest of these troublesome animals. We already hear accounts of their being numerous this year, and it appears general; we should, therefore, watch and mark the whereabouts of the nest, and take the first opportunity to destroy it. There are various ways in which this may be done, but I have not known of any more simple, safe, and sure, than one shown to me the other day by Mr. Abelwhite, of the Manor Farm, Coleby, Lincoln. The following is Mr. Abelwhite's method, which he kindly displayed to me, and I felt so satisfied with the result that I thought it would be useful to the readers of the *Journal* who might not know of a better method:—Take, of equal parts, fine gunpowder and powdered sulphur, mix them well together; roll a piece of paper, six or eight inches long, two or

three wraps round a stick half-inch diameter, three feet long; draw this paper tube to within three inches of end of stick, fill tube with the mixture, light end of tube, and hold it by means of the stick just in entrance-hole to nest, and soon the work is done. There is no risk or danger of the contents of the tube going other ways than direct forward. Tubes might be made and kept ready, provided one end was made secure. In such case tie the tube to a stick, light, and apply the dose as above.—R. R. Godfrey.

WHITE WAX.

[1700.] There is an old saying in Hertfordshire that you must not believe anything you hear and only half what you see, and from the letter published by Mr. Hooker in your issue of June 28th, it seems to be the case everywhere.

In the latter part of his letter he says: 'I quite agree with you that bees-wax in its natural state, such as the bees love to work it in, is not white but yellow.' Now, after reading this, I was sorely puzzled to know whether he or I was colour-blind, for I felt sure in my own mind that the wax-scales one finds dropped on the floor of a newly-hived swarm were always white, and on several occasions when bought swarms have arrived at my home after having been in a straw skep some hours, there have been pieces of comb built in the skep that have been pure white. I have also worked bees in sections without any guide-comb or starters, and the comb in these before any honey has been stored has always been pure white; and I trust to be able to send you a little cake of naturally pure white wax soon. On one occasion a swarm settled on a tree while I was away from home, and remained there forty-eight hours, during which time they built three pieces of comb four inches long, all of which were pure white.

After reading this letter I turned to several books to see what other writers had to say on the matter, and I find that Huber, in his *Natural History of the Honey Bee*, says that 'Wax is originally white, but the cells soon become yellow; they grow brown in time and the combs of very old hives have a blackish hue.' Cook, in his *Manual of the Apiary*, says, 'Wax is a secretion formed in pellets, the shape of an irregular pentagon underneath the abdomen. The pellets are light-coloured, very thin and fragile.' Cheshire, in his work on *Bees and Bee-keeping* says, 'Pure wax is perfectly white, the propolis added as a varnish is the usual, though by no means invariable, source of its yellow colour, which may depend upon some peculiarity in the nectar the bee is gathering at the time of building.'

I have not written this in the spirit or intention of controversy, but I think Mr. Hooker shows a want of observation on the subject, and there is little doubt that if the pure white wax could be procured in large quantities it would be more readily accepted by the bees than any other. As it is, one country—Australia—already exports pure natural bees-wax in commercial quantities, and as far as I have seen the bees have preferred it to any other.—Geo. J. Buller.

A NEW ENEMY IN THE APIARY.

[1701.] I have read and seen much of the destructive propensities of tomtits and sparrows in the apiary, and assertions made about swallows and martins catching and killing bees, of which I have no proof; but for two seasons I have been visited by a strange bird, about the size of a lark, with a reddish brown back and head, grey ash-coloured breast, black strong bill, slightly hooked, and a black streak across the eyes from the mouth to the back of the neck. When I first saw it, I admired it, and had no suspicion of its object, but this summer I observed it in the act of catching the bees on the wing when going to and from the hives with a rapidity that surprised me, and led me at once to decide his fate, and before the day was over, the thief was dead. The bird is a stranger, and, further, a rare specimen. I searched *Goldsmith's Natural History*, hoping to discover its name and qualities, but I am not quite sure I have succeeded, as, from the description, I have concluded it was a shrike, or butcher-bird. I should like to know if any other bee-keepers have had such a visitor, and, if so, whether it is that particular bird, or some other. If you will kindly give this a place in the *Bee Journal*, it may lead to my being told the proper name of it, and whether any one else has had a like experience.—S. Giblett, *Morecombelake, Dorset*.

[The bird is, as you surmise, the butcher-bird or shrike. It belongs to a species which is numerous in this country. They prey on insects, young frogs, and small pheasants. They have a remarkable habit of impaling their prey on thorns, so that the nest of the shrike may be known by the numerous insects impaled in the neighbourhood. From your description we conclude that the shrike observed by you is the red-backed shrike (*Lanius collurio*).—Ed.]

BRITISH BEE-KEEPERS' ASSOCIATION.

Quarterly Meeting and Conversazione.

The next Quarterly Conversazione will be held at 105 Jermyn Street, on Thursday, July 19th, at six o'clock. Members desirous of introducing subjects for discussion, or to submit new, improved, or interesting appliances, are requested to communicate with the Secretary not later than Monday, the 16th inst. County representatives will meet at 149 Regent Street, at four o'clock. The Quarterly Conference of the County Representatives with the Committee of the B. B. K. A., will take place at 105 Jermyn Street, at five o'clock.

All communications sent to the Secretary from the 5th to the 12th inclusive, should be addressed to 34 Waterway Street, West Nottingham.

Echoes from the Hives.

Blind Lake Apiary, Dorset, June 28th.—Just taken off three crates of sections, but, lest my brother bee-keepers may think me more fortunate than themselves, I must tell them they were all as empty as when I put them on three weeks ago. Examined the body of hive, found that just as empty of honey as the sections, but full of bees and brood. I then went on to the next, and the next, found them all the same, looked into other crates and found them in the same condition, one hive in a bad state of foul brood. Took out all the frames, no honey in them, gave them frames with sealed honey and filled the other cells with medicated syrup: hope it will prove successful. The cause I take to be starvation, and forcing the brood-nest. Have lost seven stocks this winter, all young queens, leaving abundance of stores; had forty-two hives to begin winter, fed with eight gallons of syrup and pea-flour in combs, gave them about 100 lbs. of uncapped honey-combs. Began a little before Easter-tide, but owing to the cold weather the bees would not take it. Easter Monday being a very warm day I examined my hives for the first time, found very little brood in any of the hives. Continued feeding up to the second week in May, carrying out the instructions of one writer in the *Journal* 'How it is done,' spreading brood-nest, &c., to gain the coveted 100 pounder—with the above result. Worked six hives for swarms, had only three and lost one of them near 5 p.m. after watching them up to that time. About a fortnight since I found the bees were throwing out the drones; this I took as a bad omen, and even now some of my best hives are throwing out drone larvæ. We are now nearly into July, forty hives in a state of semi-starva-

tion, the white clover just beginning to bloom, another five weeks will close the *honey harvest*. But 'what will the harvest be?' is the anxious question. This, like the past, all depends on the weather, which has been ever on the change, with over much of black, cold north and east winds blowing for days in succession half a gale, up to within the last fortnight. To-day is a downpour of rain. 'What will the harvest be?' Bees have more need to be fed now than they had two months ago. Forty hives will require about three pounds' worth of sugar made into syrup to keep them over winter.—SHERBORN.

P.S. I enclose a photograph, but a bad one, of my apiary.

[Photograph received, with thanks.—ED.]

Beccles, June 29th.—We live in the vicinity of Beccles, Suffolk, and have already taken several stones of good honey, also several sections.—A LEARNER.

Goole, June 30th.—In this district we have experienced a very cold spring, our bees entirely missed the hawthorn, and we have had great difficulty in building up our stocks to take advantage of the clover crop which has just begun to bloom. Last Sunday was about the first warm day we have had this year, and on the two following days we had splendid weather, of which our bees took every advantage, bringing in a fair quantity of the precious nectar. Then came a change, weather dull with showers, wind N.E., temperature 58 degrees, confining bees to their hives, thermometer at present standing at 49 degrees. All our strong stocks are throwing out drone larvæ and driving drones, which we cannot understand as they are bringing in no honey, but have sufficient store; if one of the purposes of the drone were to keep up the heat of the hive they would be required just at present. Is it the sudden check to the honey flow or are they preparing for a good time coming? If you, Mr. Editor, can enlighten us on this point you will oblige —A. WOODHEAD. [See reply to R. Williams, p. 327.]

North Leicestershire, June 30th.—On Sunday last the thermometer went up to 65 degrees Fahr., and the bees fell to with a will and continued hard on for the three following days, as the weather continued warm, temperature reaching 79 degrees on Tuesday. On Friday the maximum was only 52 degrees, and to-day (last day of June) at 2 p.m. the thermometer indicated 46 degrees, and as the sky is uniformly clouded and a strong wind is blowing the bees have ceased work entirely.—E. B.

Honey Cott, Weston, Leamington, July 2nd.—Very wet day again to-day, the weather has been extremely cold, and it has been raining all day. I have not taken any honey yet, and fear there will be none worth mentioning. Well, we must be satisfied with what we had last year; only the worst of it is it is all gone.—JOHN WALTON.

Dundalk, Ireland, June 27th.—The season here, up to the present time, has not been favourable for bee-keepers. We had very mild weather in the latter part of January and beginning of February. The high temperature enticed the bees out, and caused a great loss of life. This was followed by a long spell of extreme cold, lasting up to the middle of April, which helped further to depopulate the hives. In May there was a slight change for the better, ten days in the latter part of the month being splendid bee-weather. I had two stocks sufficiently strong to work in supers, and got a few sections filled from the sycamore and fruit bloom. Then the rain came just as the hawthorn burst into flower, with the result that it yielded nothing but a quantity of light-coloured pollen. Up to the 18th inst. my bees did nothing in the way of storing surplus, except as mentioned above; but, notwithstanding all my efforts, two of the strongest stocks swarmed. I made nuclei of the frames containing queen-cells, filled up the stocks with frames of foundation, and returned the swarms. Since the 18th the weather has been good, and the bees have worked hard on the white clover, but for some reason which I cannot explain, the honey has not come in so fast as it should. This evening the rain has commenced to fall again, but with a fortnight or three weeks of fine weather, strong stocks would still do wonders. And now a word with regard to excluding-adaptors. When returning one of the swarms to the parent stock, I placed an adaptor over the frames, with bee-space above and below, but the bees absolutely refused to use it, and would not work in the two crates of partly drawn out sections placed on the top, and which they had previously occupied. I left it on for two days, and then removed it, when the bees at once ascended to the sections. I find the same difficulty in using the excluder-zinc at the back of a hive, and am determined to discard it altogether. Queen-wasps were very plentiful here this year, and I am rather curious to know if that means a corresponding number of nests later on. In 1886 there were plenty of queens and very few nests; last year, just the converse.—H. O.

NOTICES TO CORRESPONDENTS & INQUIRERS.

SUPER.—*Feeding with Honey.*—Your plan will do, but beware of robbing.

H. F. W. HAMILTON.—*Swarms.*—We should say the second swarm, or 'cast,' is now doing well. No doubt the bees you saw round the chimney were scouts. We know of a tower quite 200 feet high where the attendant annually secures a fine *early* swarm of bees by putting a skep on the top early in May. He has no idea where they come from, as he is quite in a forest. Watch next season, and if not much labour, put a skep in position early in the season. No doubt these bees have joined your first swarm. Put on another rack of sections *under* those already on.

H. MARRS.—*Foul Brood.*—We are afraid you have got this pest. Does it smell bad? Spray the combs in the evening with phenolated syrup, so that the cells all round the brood get a fair quantity. As fast as the brood hatches out, remove the comb and insert *new frames* with sheets of foundation. Destroy those removed. If possible, remove the bees into a fresh hive. Well scour the present one several times with hot water, carbolic acid, and salycilic acid, allowing an interval of a day or two between. Take every precaution with the second swarm. We would recommend you to drive the parent stock, as that is apparently the cause of the mischief. 2. *Comb in Section.*—Worker size has the neater look, but well-filled sections sell well whatever the size of the cells.

F. D. MAXWELL, BURMA.—*Slow Feeding.*—For slow feeding we prefer giving only so much at sundown as the bees may take down in one night, say, one third of a pint. This will be all down before sunrise, will keep them in good heart, but will not allow their queen being crowded out. This mode also is not so likely to cause robbing as day feeding. You do not say what slow feeder you use, but the Raynor principle is the best. [Bee-keeping in Burma is a subject we should very much like you to favour us with notes upon. We have seen Rev. Bunker's contributions to *Gleanings*, but if not inconvenient to you, we should appreciate your assistance in the matter. Any remarks on the habits or peculiarities of the wild bees, and any native method of securing wild honey, would, we are sure, be also highly appreciated by our readers.—ED.]

DORSET.—*Paint.*—Bees frequently resort to new paint, as it contains substances from which propolis is obtained.

A LEARNER.—*Ripening honey.*—If the bee-keeper waits till all the cells are capped, much valuable time is lost. When a large amount of unripe honey is extracted, it can be brought to a proper consistency by means of an

apparatus called the Rapid Honey Extractor. But possibly the cost of this may be a consideration, and then it would be advisable to keep the honey in vessels in a room at a temperature above 80° Fahrenheit.

INQUIRER.—*Bees Impaled.*—The bees found by you impaled on the spikes of the fir were placed there by the shrike or butcher-bird. See note to 'A new Enemy in the Apiary,' p. 325.

C. TRUSCOTT.—1. *One Pound of Bees.*—It is computed that 5000 bees weigh one pound. 2. *Bees to cover six Frames.*—In the summer months three pounds of bees will cover six standard frames, in winter it would require four for the same purpose. 3. *Laying Powers of Queen.*—H. Taylor is right when he says that the queen-bee lays from 600 to 900 eggs a-day; but in the 'height of the season' the queen is capable of laying as many as from 2000 to 3000 eggs a-day (see our *Guide Book*, p. 7). 4. *Drone and Worker Eggs.*—A healthy queen has the instinct-power to lay drone or worker eggs in the cells constructed for the same. If for any reason the queen is not fertilised, or if her powers are exhausted, she will lay only drone eggs.

W. W.—*Suspicious Comb.*—This is foul brood beyond a doubt. Spray combs in other stocks with phenolated syrup at once.

DONALD.—*Management of Bees.*—Put twenty-one sections in super on hive at once. Watch for their completion, and remove when ready, inserting fresh ones in the place of those taken out. We are not acquainted with your neighbourhood.

X. Y. Z.—You shall have a full reply to your interesting query in our next issue.

HON. DISTRICT SECRETARY.—*Doubling Hive Neglected.*—You can either put a third box underneath, which plan would give you the largest return of extracted honey, or you could make an artificial swarm of nine or ten frames, placing super on it at once. If you decide to give them an extra box only use starter of foundation in it, as they will not swarm until the combs are brought nearly to the bottom. Extract in August before the bees begin to carry stores down.

A. SMITH.—Messrs. Abbott Bros. have signified their intention of publishing in a sheet form the photographs of the most eminent bee-keepers in the United Kingdom. When ready for publication, they will no doubt give notice thereof through the usual channels.

WILFRID STEPHENS.—1. *Fighting.*—Your bees were not fighting with each other, but were defending their home from the intrusion of stranger bees who were intent on robbing. 2. *Presence of Queen.*—We should consider that the queen had accompanied the swarm in its return to the parent hive. 3. *Bumping.*—We must refer you for an explanation of the 'Bumping system,' to our account in the previous volume of the *Journal*, see No. 268, page 342. 4. *Drones.*—Have you much drone-comb in your hive? if so, this would account for the abnormal number of drones. We presume there is worker brood hatching out; if not, your queen is probably a drone-breeder.

FRANK NELL.—*Bees Swarming.*—It is often the case that bees that are about to swarm are prevented doing so by such rainy and cold weather as is now prevailing in every part of the country, in which case the queen-cells are again prepared, often causing the delay of some weeks, and often the bees do not swarm at all during the season.

R. WILLIAMS.—*Turning out Drones.*—The drones, being the most unprofitable inhabitants of the hive, during a time of famine arising from bad weather are turned out in order that the working population may not starve.

W. C. THOMAS.—*Close of the Honey Season.*—Is it not early to assert that the honey season is over in your district as there are few parts of the kingdom where there are not some sources of honey-getting still accessible to the bees? *Foul Brood.*—There are many modes of treatment of this disease; that recommended by Mr. Cheshire has been found successful, the process adopted by him will be found in Cowan's *Guide-book*, page 151, last edition. See reply to H. Marrs.

Mr. F. Mackel, Campbelltown, near Sydney, New South Wales, is desirous of receiving catalogues from English manufacturers of bee-appliances.

Mr. J. H. Bolton, of Southgate, intends exhibiting samples of honey products at the show of the N. E. district of Middlesex, to be held on July 21st. He will be glad to receive samples of any really good preparations containing honey, or specimens of different well-authenticated varieties.

SHOWS TO COME.

July 9–13.—Royal Agricultural Show, Nottingham. Secretary, J. Huckle, Kings Langley. Entries closed.

July 19–20.—Cambridge Agricultural Society at Cambridge. Secretary, R. Peters, 7 Downing Street, Cambridge. Entries close June 25th.

September 5–7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 1st.

Business Directory.

HIVES AND OTHER APPLIANCES.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
APPLETON, H. M., 256A Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BURTT, E. J., Stroud Road, Gloucester.
EDEY & SON, St. Neots.
GODMAN, A., St. Albans.
HOWARD, J. H., Holme, Peterborough.
HUTCHINGS, A. F., St. Mary Cray, Kent.
MEADHAM, M., Huntington, Hereford.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.
WALTON, E. C., 82 Emmanuel Street, Preston.
WEBSTER, W. B., Binfield, Berks.
WOODLEY & FLOOD, 26 Donnington Road, Reading.
WREN & SON, 139 High Street, Lowestoft.

HONEY MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BRITISH HONEY CO., Limited, 17 King William St., Strand.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BENTON, F., Laibach, Carniola, Austria.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
SIMMINS, S., Rottingdean, near Brighton.

METAL ENDS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
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VOL. XV. OF

The British Bee Journal,

FOR 1887.

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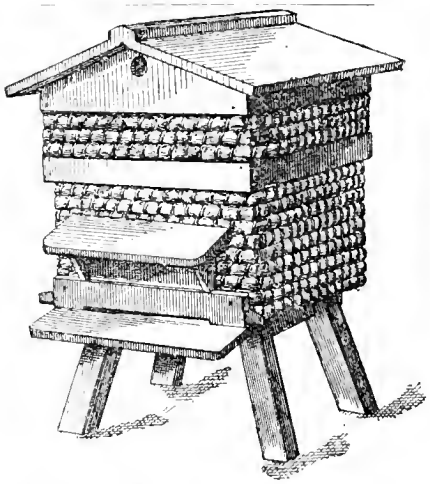

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BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

[No. 316. VOL. XVI.] JULY 12, 1888. [PUBLISHED WEEKLY.]

Editorial, Notices, &c.

ADULTERATION OF HONEY.

In our article on page 233 we commented on the practice of adulterating honey, and based our remarks on a table of the analysis of honey taken from the *Bee-keepers' Magazine*, in which it was shown that out of thirty-one samples put up by packing-houses only six were found to be pure. We stated that samples Nos. 57, 58, and 60, were comb honey, for thus they were described, and we think it in justice due to American comb honey to state that in an editorial, the *Bee-keepers' Magazine* explains 'that this so-called comb honey was put up *à la Hoge*, viz., a *little piece of pure* comb honey in a big jar of glucose.' Our contemporary *Gleanings* notices our remarks in the article we publish below, and hints at the possibility of the whole thing being a hoax. Our article was written in the interest of bee-keepers and bee-keeping, and we have never hinted that bee-keepers ever adulterated honey, and we should repudiate such an idea quite as strongly on behalf of our American cousins as our friend the *American Bee Journal* does. If this report is by a bogus commissioner how did it find its way into the *Bee-keepers' Magazine?* Our object is to protect the interests of bee-keepers, be they English, American, or of any other country, and we should not be doing our duty if we did not expose what we knew was doing them harm. If it is shown that the whole thing is a hoax or a trick of trade we shall give it every publicity.

We always believe people to be honest until we find out the contrary, and we believe the report of the Dairy Commissioner of New Jersey to be a genuine one; just as we should have every confidence in the reports of our own analysts. We do not believe, nor would anyone believe, that the American people were all Hoges. We would suggest to our esteemed friend the Editor of *Gleanings* that *thirty-one* dealers hardly constitute *all* the American people, for whom we entertain the most friendly feelings. Nothing will give us greater satisfaction than to find, as the *American Bee Journal* says, that we 'have been again "taken in," not by a "clergyman" this time, but by a so-called "Professor."'

This is what *Gleanings* says:—

'At the Bee-keepers' Convention in Utica, N.Y., last winter, one of Thurber, Whyland, and Co.'s men was very busy in distributing circulars to the bee-men. He had a great pile of them and evidently made it his business to distribute them broadcast. These slips of paper gave an analysis of honey which was made, as was stated, by the Dairy Commissioner of New Jersey. We do not know who this Dairy Commissioner is, nor how good an authority he is; but when I first glanced over the circular I felt a little troubled to see that it contained a list of names of good and responsible firms who were accused of selling adulterated honey. In fact, almost every sample of honey that was examined, according to said report, was adulterated, with the exception of a few samples from private farmers or bee-keepers, with one *other* exception. This exception is Thurber, Whyland, and Co. Now, the singular part of the whole thing is, that samples Nos. 57, 58, and 60, were *comb* honey, and not *strained* honey, although the heading in small capitals at the top of the list says "strained honey." Friend Cowan takes the matter up, and reflects somewhat on American honey, especially the fact that the American comb honey in our markets is, at least some of it, adulterated. The *Bee-keepers' Magazine* also indorses the paper, and makes some severe reflections on firms that we believe to be good and honourable men. I am exceedingly glad to know that the Thurbers, who so recently put up honey with corn-syrup in to keep it from candying, have reformed to such an extent as the circular indicates, but I do not believe that everybody else has gone into the adulterating business. We have instances on record before, where some sort of a chemist has pronounced absolutely pure honey, gathered from the flowers by honest bees belonging to an honest bee-keeper, adulterated. Who can give us some further information in regard to this Dairy Commissioner of New Jersey, and this statement given by the *American Grocer*, presenting such a disgraceful showing of the bee-keeping industry of the United States? I thoroughly endorse all that the *B.B.J.* has to say in regard to Hoge: and the whole matter looks very much as if Hoge still had hold of the crank. But we beg our English cousins to remember that the American people are not all Hoges, *by any means.*'

Selected Queries.

[16.] *Can swarming be prevented in a majority of cases? If so, how do you manipulate your colonies to obtain this object?*

Yes, by constantly giving more room as it is wanted, either by adding bars or putting on supers. N.B.—Great care is required lest the bees get too crowded.—E. B.

The probability of swarming can be greatly lessened by using hives on my (Abbott's) Combination principle, the frames in which lie across the hive parallel with the entrance front, as in such hives only can additional and practically unlimited brood space be given at any part of the brood-chamber, be it front, back, or centre. I write

this in antagonism to the wretched principle of tiering as practised on hives, the basements of which are uninvadeable without first having in each case to pull down the whole pile. The idea of doing this provokes a 'Wheugh!'—C. N. Abbott.

Yes. For extracting, surplus room may be given so soon as the bees will protect and cover the brood, and bodies added in succession just in advance of the colony's requirements. For comb-honey, we practise to let the bees get well in possession of the first super crate, then remove it and inspect the brood chamber. In a prosperous colony, at this stage, queen-cells are found begun, displace them and give additional room, by removing one or both dummies, and let the foundation-filled frames divide the brood in centre of the hive. Replace the original crate with one additional between that and the hive. The second crate in full work; under tier another, another, and yet another, as required, and should bee-life increase faster than the honey, we add a shallow body with starters only under the whole pile, and by sliding our floors back we give just so large an entrance as desired; holding bottom ventilation in great esteem, and close-fitting and well-packed supers a first duty.—John H. Howard, *Holme, Peterborough.*

Yes. Examine frames frequently, and cut out all queen-cells, and give crate of sections.—Tom Sells.

Yes. Have suitable hives, so as to be able to give room enough. Look through the colonies about every ten days during swarming time, removing all queen-cells. —Henry Beswick.

Yes, with black bees. Open the entrance the full width, give additional space well in advance of their requirements, by tiering up cases of sections, or supers of shallow frames. If the weather is very hot raise the front of the hive, and shade to keep it cool. If after this they continue to lay out, put a hive with shallow frames filled with foundation under the brood chamber, and so give them some comb building to do.—John M. Hooker.

I always endeavour to keep just ahead of the bees, with room, and with a good season, and a steady honey-flow, swarming will be the exception rather than the rule; but in a poor season, with occasional honey-gluts and a humid atmosphere, no plan short of cutting out every queen-cell will prevent swarming.—W. Woodley.

Yes, by giving plenty of room over the brood-nest, if I have an idea that such a hive will swarm, and I don't want it to do so, I just take off the supers, and take each frame out, shake or brush the bees off, and cut out any queen-cells that may have been started or that are maturing.—John Walton.

Yes; I do not get more than one per cent of swarms beyond what I desire, and bring about this result by removing the three front brood-combs (nearest the hive-entrance) and replacing them with frames containing quarter-inch starters only. This being done before putting on supers and before the principal honey-flow commences, and afterwards tiering up so as to give the bees room slightly in advance of their requirements. For this arrangement I only use hives with their frames arranged parallel with their entrances.—H. Wood, *Lichfield.*

[17.] *If a colony swarms in the middle of a honey glut, the supers being partly filled, what is the proper thing to be done?*

Put the swarm on the stand of the parent stock, and the parent stock on the stand of the strongest stock you have. If your swarm is put on worked-out combs, or whole sheet wired foundation, a super may be put on at once. If increase of stocks is undesirable, cut out all queen-cells but one; deprive the swarm of its queen, and throw the bees back at night.—E. B.

Take the queen from the swarm, and the bees will go back to the hive.—C. N. Abbott. I note after having written the above 'short and concise' answer, that your question is as to the 'proper' thing to do. My answer is based on the assumption that the chief point of exigency in such case would be in respect of the unfinished super, and points to the nearest way out of the difficulty, for by taking the queen away and thus forcing the bees to return to the hive, further swarming would be prevented for at least eight or nine days, and nine days from the middle of a honey glut in this country would pretty nearly see the end of it, and let us hope, the perfect completion of the supers. There may be those who would prefer to hive the swarm, and others who would return it queen and all, after first pulling to pieces the pile of hives and supers and cutting out the queen-cells; but to a busy man, 'the game is not worth the candle.'—C. N. Abbott.

A hive of twelve-frame capacity always super with the dummies at sides. It is an easy matter to then remove them and open up the brood-chamber, and add foundation-filled frames in the centre, at the same time search out and displace every vestige of queen-cell, adding between the supers and brood chamber another surplus crate. Carry this out at evening, and return the swarm. With undiminished strength the colony soon recovers, and may need additional super room, should the honey glut continue.—John H. Howard, *The Model Apiary, Holme, Peterboro.*

Remove stock to another stand, place supers on new swarm, and set it on old stand.—Tom Sells.

Cut out all queen-cells, and put the bees back again. I always do this, and it has given me, without a single exception, very successful results.—Henry Beswick.

Hive the swarm in a skep. Take the colony from which the swarm came out, and put it in a new position. Furnish the frames of another hive with starters, and put it in exactly the same place as the other stood, fix a queen-excluder honey-board on the top, and put on and secure the quilts from blowing off. Then spread a cloth in front of and close up to this hive with two sticks about a foot apart upon it. Stand the skep on the sticks and give two or three smart blows on the hive, then raise it quickly, and put the hive over the bees, and they will soon run up into it. If done in the middle of the day the hive must be shaded. When they are all in, place the hive on the stand and the partly-filled supers from the old colony of the swarm above the excluder, and they will go to work and fill them quickly.—John M. Hooker.

Capture the queen before she flies off the alighting board; and when they are fairly out, before they have missed the queen, lift off the super crates that are on and put another empty one next the frames and return the others for completion; probably the comb-building in the sections will satisfy the natural instinct of a swarm for wax-secreting and comb-building when they return, which they will soon do without any trouble to the bee-keeper—of course he will want to be on the spot when the swarm first commences to issue.—W. Woodley.

I hive the swarm and set it near the old stock, then go over the old stock, and taking off supers cut out queen-cells, then replace supers, and at evening throw the swarm back again. Sometimes I take a frame or two of brood away, and put in sheets of foundation in their place.—John Walton.

Hive the swarm on to frames having quarter-inch starters only fitted in them, and put the new swarm in the place of the old colony after removing the latter to a new position, and then place the partly-filled supers, with a queen-excluder underneath them, on the new swarm, by which means work will proceed as before in the supers, and after-swarming from the old colony will also be prevented.—H. Wood, *Lichfield.*

ASSOCIATIONS.

BRITISH BEE-KEEPERS' ASSOCIATION.

Quarterly Meeting and Conversazione.

The next Quarterly Conversazione will be held at 105 Jermyn Street, on Thursday, July 19th, at six o'clock. Members desirous of introducing subjects for discussion, or to submit new, improved, or interesting appliances, are requested to communicate with the Secretary not later than Monday, the 16th inst. County representatives will meet at 149 Regent Street, at four o'clock. The Quarterly Conference of the County Representatives with the Committee of the B. B. K. A., will take place at 105 Jermyn Street, at five o'clock.

ROYAL AGRICULTURAL SOCIETY.

Nottingham, July 9th to July 13th.

The following prizes were awarded on the first day of the show:—

Class 184.—For the best collection of hives and appliances.—1, Messrs. Neighbour and Sons, 20*s.* and silver medal; 2, J. H. Howard, 10*s.* and bronze medal; H. C., T. B. Blow. 185.—For the best and most complete frame-hive for general use, price not to exceed 15*s.*, unpainted.—1, C. Redshaw, 20*s.*; 2, Abbott and Sons, 15*s.*; 3, T. B. Blow, 10*s.*; H. C., A. T. Adams.

At the time of our going to press the awards were not complete. A full report will be given next week.

IRISH BEE-KEEPERS' ASSOCIATION.

The Committee met on the 3rd inst. Present—Mr. Sproule (in the chair), Dr. Knight, Dr. O'Farrell, Messrs. Gillies and Read, and the Hon. Secretary. It was decided that the Exhibition Bee-tent should be sent to the Horse Show at Hollymount on the 7th August. Mr. Read consented to act as lecturer. Resolved—'That the Association's handsomely illuminated certificates be granted to members who win prizes for honey at local shows.'

THE HANTS AND ISLE OF WIGHT B.K.A.

The above Society held their annual show, as usual, in conjunction with the Royal Counties Agricultural Society at Bournemouth on the 26th, 27th, 28th, and 29th of June.

The weather, always an important factor in the success or otherwise of such exhibitions, was very far from desirable, rain being almost incessant from the opening to the closing of the Show. The Prize Schedule was unfortunately of an exceedingly limited character, since the R.C.A.S. could only see their way to a grant of 10*l.*, while the local committee (*horresco referens*) were afflicted with such grievous blindness, that they could not see their way to making any grant at all, while, in addition to financial straitness, the late season doubtless contributed largely towards reducing the number of entries and exhibits in the honey classes, so that the show, as far as the H. & I.W.B.K.A. is concerned, will in no way bear comparison with those of previous years.

That the enthusiasm for, and interest in modern bee keeping have in no way diminished, was amply proved by the large and appreciative audiences that thronged the tent during each and every lecture, the lecturing and practical work being entrusted to the able tongues and hands of Messrs. E. H. Bellairs and T. B. Blow. It is also satisfactory to be able to state that what honey there was for sale, was all sold at remunerative prices.

Subjoined is a list of prize-winners:—1.—For the best collection of Bee Furniture, Silver Medal, Mr. T. B. Blow. 2.—For the best and most complete Bar Frame Hive; price not to exceed 15*s.*, Bronze Medal, Mr. T. B. Blow; Certificate, Messrs. Woodley and Flood; *v. h. c.*, Mr. J. Shering. 3.—Observatory Hives. No entries. 4.—Best 24-lb. super Honey. No entries. 5.—Best 12lb. extracted Honey; 1st, T. Hiscock; 2nd, —Crowther; 3rd, A. Stephens. 6.—Best 12lb. super Honey; 1st, J. Shering; 2nd, T. Giles. 7.—Best Bar Frame Hive; to be the work of an amateur. 1st, A. Stephens; 2nd, A. Pearce. 8.—Bees-wax; 1st, Mrs. Burgess; 2nd, J. J. Candy.

GLAMORGANSHIRE GENERAL AGRICULTURAL SOCIETY'S SHOW.

The Glamorganshire Bee-keepers' Association will hold an exhibition of honey, hives, and bee-appliances in conjunction with the above show on August 1st and 2nd. Prizes will be given by the Swansea Local Committee, the Glamorganshire Bee-keepers' Association, the British Bee-keepers' Association, and Mrs. J. T. D. Llewellyn, Penllergare.

Another Definition of the word 'Blizzard.'—The word 'blizzard' was used in Virginia, North Carolina, and South Carolina, in the common speech of people of English, Irish, and Scotch descent a hundred years ago. Forty years ago, and earlier, in the states of Ohio the word always meant 'loud and rapidly-uttered scolding, voluble and excited, but not indicating deep or settled bitter feeling or hatred.'—Tyrus H.

Remedy for Bee-Stings.—Drop one drop of diluted phenol on the place where stung, and rub lightly with a piece of alum for a few seconds, when the pain will disappear quickly. I often get my hands stung, and think the cause of it is chiefly owing to them being so hairy, and I have used the above remedy to them and it has never failed to give relief.—Tyrus H.

Antiquated Bee-Keeper of seventy summers. Good morning. I was feeding my bees with a little sugar, but I had such a nice bee-paper sent me, and that said I must not feed, so I gave over.

Amateur Expert.—I did not read it so; I understood it to say you must not feed unless necessary, which is always sound advice, but I am pleased you like the *Adviser*. Did you read it?

A. B. K.—Sure, yes; every word.

A. E.—I hope you will subscribe to it, your newspaper man will get it for you; it is only 1½*d.* per month.

A. B. K.—Lor bless you! with my poor old eyes I should never be able to read it!!—Exit *A. E.*

Bees Impaled.—*Another View.*—If the bees are placed on the spikes of the fir by a bird, how do you account for the bees being alive when found, which is sometimes the case? One of the bees I forwarded was alive when found, I put an end to its sufferings by placing the piece cut from the tree under water. We rarely ever see a bird in my apiary, there are no buildings near, perhaps that is the reason. I am still of an opinion (in my case) that the bees are impaled by the force of the wind.—Dorset.

A New Bee-book.—We believe that Mr. J. M. Hooker is about to publish a new work on bees. Mr. Hooker has been a member of the British Bee-keepers' Association since its formation, he has acted as a judge in all parts of the United Kingdom, and he has carried off many prizes. We may therefore expect that a work from his pen, embodying the practical experience of many years, will prove acceptable to all bee-keepers.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to "The Editor of the "British Bee Journal," c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C." All business communications relating to Advertisements, &c., must be addressed to Mr. J. Huckle, Kings Langley, Herts (see 2nd page of Advertisements.)

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

HONEY IMPORTS.

The total value of honey imported into the United Kingdom during the month of June, 1888, was 1,739*l.*—John Courroux, *Statistical Office, H. M. Customs.*

GIVING THE BEES ROOM TO PREVENT INCREASE.

[1702.] To obtain the greatest yield of honey, ordinarily, swarming must be controlled to a great extent, although we often gain in surplus by allowing strong, powerful colonies to cast a swarm. A certain amount of space may be profitably occupied by bees, but an over-supply of bees to the amount of space is not so profitable. Hence a division of the swarm is, I think, more preferable, and no better division can be made when surplus honey is in view than to permit the bees to make it themselves, if at, or near, the proper time. But in allowing such increase, a line must be drawn, as any increase, except in such cases, is a barrier to honey production.

The size of the hive, or space for the brood-chamber, as generally adopted by bee-keepers, is about 2000 or 2400 cubic inches, and the surplus department should have about the same dimensions. A prosperous colony in the honey season should occupy this entire space, filling every crack and crevice to such an extent as only to admit of working room, or, as the saying is, 'elbow room.'

When this space becomes crowded, and the bees are forced to the outside for room, loafing in large numbers, clustering on the outside of the hive, will take place. If this occurs during the honey-flow, it shows that something is wrong, that room is required; and I prefer, rather than to add another storey to the hive, to swarm them naturally if possible, and thus have them divided into colonies. If the above is correct, the reader will readily understand what it takes to make a prosperous colony secure the best results.

In order to prevent all swarms that may not be desired, in most cases it is only necessary to keep down the construction of queen-cells. Swarming may be very easily foretold from six to eight days by the construction of queen-cells. The destruction of these cells will discourage swarming, and in most cases prohibit it. But in rare exceptions bees will sometimes persist in issuing, even if queen-cells are not present, especially after frequent annoyance, by removing their cells, from the fact that their leaving the parent colony in this condition does not injure it. If brood is present, their excuse for so doing may be deemed reasonable; but as this will at once check the process of storing surplus, the point aimed at, it is necessary that we keep them together, and the only way we can make a sure thing of it is to take away their queen. This is a never-failing remedy to check swarming at the time.

If an abundance of young brood is present in the hive, I cannot see that it will do any particular harm; but as a general thing this is a preventive only for the present, for if honey-flow continues there will likely be another effort made to swarm eight days thereafter. Queen-cells constructed from the brood left after the removal of the queen will, at this period, be maturing, and swarms may be the result. At this stage of proceedings we have made the best progress by removing all queens or cells and introducing a laying queen.

Another plan we have used, which may be equally as good with those persistent swarmers, is to allow them to swarm, hive them in a new location, and strengthen them up ready for occupying the surplus boxes at once, by drawing from either of those left or other colonies. If, on the other hand, we wish to increase our number of colonies somewhat, and at the same time secure a fair crop of honey, we would manage to have all strong as near the swarming point as possible at the opening of the honey-flow. In fact, it matters not what particular method of management we intend to adopt for the season; it is of the greatest importance in any case to have strong colonies at the commencement.

Doubling the number of colonies is a fair increase. This we can do, and at the same time secure a fair crop of honey, and we would do this by allowing the first swarms to issue. I think this better than dividing if saleable surplus honey is the object, together with a fair increase.

If we expect to make increase the sole object, we would manage quite differently. We would work entirely on the artificial plan of increasing by dividing. Previous arrangements should be made in rearing queens, so that the supply is at hand at the time of operating. In making these divisions we should not separate into too many parts at one time. A colony divided into two is enough at once. Each queenless half should be provided with a laying queen, thus keeping each part strong, and furnished with laying queens. This keeps up a large portion of the brood at all times, and doubles the laying forces by the addition of an extra queen at each division.

When dividing a colony into many parts at one time, it weakens each part so, that even if laying queens are furnished, the amount of brood-comb in which to deposit eggs is limited according to the strength of the colony. Hence comes the necessity of having each part as strong as possible, thereby accommodating the queen with room according to her laying capacity. The secret of success is in dividing more frequently, and not making so many parts at once out of the same colony.

A strong colony divided into two parts may be divided again into four parts in six or eight days, when it may be kept up every ten or twelve days thereafter, being governed entirely by the flow of honey, which may be either natural or artificial.—J. A. B., *Ohio Farmer.*

PACKING AND SENDING ONE-POUND SECTIONS BY RAIL.

[1703.] How may this be done with success, for I doubt not there are other bee-keepers besides myself in an anxious frame of mine respecting this feature in our industry. They may rightly, too, be anxious, if they have not been more successful than myself in the matter. If some kind friend who has had good experience in the above would give a detailed account how he does it, I know of one who will feel greatly indebted to him. How may small lots of, say, six or one dozen be sent? also larger lots? Will they take them through parcel-post? How must they be labelled? Can it be successfully done without proper spring crates to send them in? If any one will answer the above, and suggest anything that will be helpful, he will greatly oblige—A Lincolnshire Novice.

NOTES ON CURRENT TOPICS.

[1704.] *Setting up of Swarms.*—'Useful Hints,' in his excellent article of June 5th, states:—'When a new swarm is "set up" on its stand, the hive should be placed quite level, or in exactly a horizontal position with a spirit-level;' quite right; but when he adds, 'and then raised one inch at the back, if the frames range from back to front, but if from side to side of the hive this must never be done,' I beg to dissent from his raising the back of the hive in either case. I gave him a friendly shot on this subject last year, and now feel inclined to fire my second barrel. Why? Because this is a matter of great importance in bee-keeping, and apparently no one else cares to break a lance with him. I am the more disposed to do so, because I know he will take what I say in good part, and because he will know it is said in the interest of bee-keepers. Now I have several reasons for objecting to raise the hive at the back, and think that all our friend's wishes may be accomplished by other means. The first and, to my mind, most fatal objection to the plan is that raising up the back of the hive throws the foundation out of the perpendicular, and upsets the 'pull' which the weight of the bees exercise when clustering on it, and which, so long as the hive remained perfectly horizontal, was equally distributed over the whole length of the top bar. My second reason for not raising up the back of the hive is, that if the floor-board be properly constructed, it is unnecessary. Floor-boards should be loose and planed, so that there is a gentle slope on all sides towards the centre, and then the centre planed with a gradual slope out of the entrance. If this be done it will answer all 'U. H.' desires without any raising up of the back, and also avoid the chance of any drip from the roof on to the alighting-board. I hold it to be of the utmost importance that all hives should be perfectly level, both for doubling and for using sections, if the best results in straight combs are to be obtained. If I am right in what I have stated above, it nullifies the advantage claimed by our friend for 'the perpendicular over the parallel system,'—whatever that may mean, for I confess I never could tell what it meant, whether parallel to front or entrance or what, hence I could not understand what your correspondents were writing about. This much I made out, that only about one in ten had tried the two ways of hanging frames, so that I put down nine-tenths of their evidence as valueless.

Adulteration.—I certainly think pure bees-wax may be bleached white by exposure; besides, is not the genuine article—that made by the bees—naturally white?

Reversing Frames.—Referring to what Mr. Alley says respecting reversing frames, to get them built to the bar both top and bottom, you state that you 'accomplish this by cutting the combs from their attachments at top and sides, and allowing them to drop on to the bottom bar, keeping them in place by a couple of pieces of tape until fastened.' I should certainly hesitate to adopt such a plan, and would dissuade beginners from trying it, because if the combs contain any quantity of honey, the weight will bend down the bottom bar one-eighth inch, and flimsy, as it often is, and afterwards that bar will crush bees in manipulations; besides, I never could get the bees to make a really good job of piecing up the comb again and making it really secure as before, their tendency is to leave 'popholes' (I beg pardon, 'Useful Hints').

I must defer other remarks until I have a more favourable opportunity.—F. Boyes.

USEFUL HINTS OF JULY 5TH.

[1705.] Having used nothing else in my manipulations during the last two years, I can confirm the remarks of the writer of 'Useful Hints' in your last issue with regard to the carbolised cloth and feather. Will he or some other kind reader of the *Journal* inform me through your columns—(1), Whether carbolic and salicylic acid solutions deteriorate by keeping? (2), Should they be kept in open or airtight vessels? (3), Is the action of light in any way injurious to either?

Trifolium minus, *T. repens* (white clover), and *Medicago lupulina*, are much more abundant here (Vale of Clwyd) than usual, doubtless owing to the same cause mentioned by 'U. H.'—the drought of last summer having induced the plants to mature the organs of reproduction in lieu of growth. Sir Joseph Hooker gives *Trifolium procumbens* as the 'Hop Trefoil,' not *Medicago lupulina*.

May I suggest, before 'U. H.' does away entirely with the boards in front of his hives, his altering the angle to one too steep for toads to climb, and they will still remain of great assistance to heavily-laden bees which may be almost too weary to reach the entrance, especially in windy weather?

I took twenty-one sealed one-pound sections and nine incompleted ones off one of my hives on the 5th inst., returning the latter for completion, and filling up the crates with sections containing full sheets of foundation. Those taken contained only starters and partly worked combs from last year when put on, and several have pop-holes and are discoloured, doubtless owing to the variable honey-flow.

I am inclined to think my bees favour the Alsike (*Trifolium hybridum*) in preference to the white clover (*Trifolium repens*).

We are now passing through a period of cold showery weather with occasional thunder-storms, just as the white clover is in full bloom. Hay cut a fortnight ago still out in the fields.—W. Lester Smith, *Rhyl, 9th July.*

DESTROYING WASPS' NESTS.

[1706.] I have practised the method described by Mr. Godfrey [1699] for twenty years, but unless the nest is dug out and destroyed after applying the 'dose,' and whilst the inmates are comatose, they will recover in a short time, and apparently none the worse for the little 'dose.' I simply state this to prevent disappointment, and I trust my old friend will pardon me for completing the recipe.—S. F. Clutten, *Whittingham Hall, Fressingfield, July 9th.*

SUGGESTIONS.

[1707.] I beg to offer my thanks for the suggestions made by writers to your valuable paper, and especially to two later ones on the cork-dust float for drinking fountain or vessels (riddled cork to be used only), which I find to answer all expectations, superior to grass, moss, sand, or sawdust. The latter is the next nearest. The other idea is the carbolic cloth, used with slips of wood tongued and grooved. Having used the cloth before for some few years, and found it most useful, I offer in return two simple hints: To keep the carbolic cloths in a Symington pea-flour tin. I find them ready for use at once, as I spray them after using and before putting away in the tin. The other is a comb-cutter for straw hives or caps, especially when only one comb is wanted out. Having a straw cap on hand from last year full of comb, with the central comb fully 1½ in. thick at the crown and not very straight, I found the steel cutter out of the question, and wood lathes ⅜ in. too thick to pass freely, I hit upon the use of the steel ribs from a small sunshade or parasol, using the *inner ends* having holes, suited, both to fix some 28-tinned wire to, and through the other end eye, passing upwards to the fingers, and there held. By that means I could widen the gap, but the wire should be annealed. The eyes being at the *extreme end* enabled me to cut close to the crown. I

took two central combs out thus, uncapping that left in the cap to feed the stock, the latter having given off a prime swarm a few days before. I am afraid no second swarm will come off, as I picked up a queen about five days after swarming.

Another point is deduced from comparing the honey in this cap, which is twelve months old, and *not granulated*, whilst the same class of honey in sections and jars was granulated in a very few days (less than a week). Again, the same taking of honey placed in a strong stone jar, holding some 18 lbs., did not granulate; hence I deduce this, that honey can scarcely be too well protected from cold, and that glass bottles are too cold and too sensitive to cold.

I had one swarm, June 4th, bulk drowned, as out three nights two days; only saved enough to cover three frames. Another swarm June 25th. Only one stock of bees in supers and two up in tops, and not much chance of honey with these cold but now-wet days unless we have warmth soon. June, twelve wet days and six cold; July, three wet days.—W. G., *Rastrick, July 4th.*

A GOOD WAY TO EMPTY SUPERS, &c.

[1708.] The time is here when we ought to have supers to empty; I used to brush the bees off in front of hive, and as there is always a lot of young bees who never saw the outside world, wander about, get chilled, and lost. Having tried several ways to avoid this, I find the following most perfect, having used it for two seasons, viz., a piece of board 16 inches wide—you can have it to take hives that hold twelve or so frames—nail on strips at sides, $2 \times \frac{1}{2}$, also at one end, leaving an opening in end strips to allow flat tube of perforated zinc about 16 inches long; the other end strips leave loose, so that you can move it backwards or forwards to suit any size supers or box of frames, and lift the supers off; adjust back to size, leave it for a few minutes, so that the bees know they are without queen; now place it on a few bricks or anything to bring it level with hive entrance, and let the tube rest a few inches from entrance. At first one or two bees will come out and make that sound we know so well, having found the queen; and in a short time you will see supers empty.—A. J. Noyes.

HONEY YIELD.

[1709.] It was with some satisfaction I read what appeared to be a plain statement of facts in the *B. B. J.* of June 28th (par. 1652). I had often thought north-east Staffordshire must be a bad locality for bee-keeping, as the average honey yield about here is much below that generally quoted, but possibly it is as good as the average for the kingdom. Last year I was fortunate enough to obtain about 60 lbs. from each of two stocks, but one of these had been augmented with six or eight brood combs from another hive.

Swarms, or stocks which had been swarmed, did not give, as a rule, more than about 10 lbs. surplus, and many not that. This year my hives were strong, and had doubling boxes or sections on by the middle of June; but owing to the east wind and the rain, whatever honey has been gathered so far has been consumed by the bees. The hawthorn and sycamores are over, the meadows will be mown as soon as fine weather sets in, and clover in this district seems this year to be almost a failure, so that the prospect is a bad one. I have known a number of persons who had evidently been misled in respect to the profits from bee-keeping, and who, after being very troublesome to those who could help them in management, gave up the pursuit, feeling they must have been imposed upon, either by those from whom they bought the bees or the appliances, or else by those who had advised them. I shall be glad to read of bees in other districts doing better, but I am afraid our crop will be a light one.—Thomas Harper, *Uttoxeter, July 2nd.*

FROG AND BEES.

[1710.] Is the following a unique experience? A friend told me that last week as he was watching a hive, he saw a frog come slowly and cautiously along the gravel path. As he got nearer to the hive, his caution increased. He went more slowly, was 'all attention,' and evidently bent on his prey. The hive was very near the ground, and when the frog reached it, he stood on his hind-legs, and continued some little time in this position, gazing evidently at the hive. Presently a bee came near the edge of the floor-board. Instantly the frog crawled forward, put out its tongue to its utmost stretch, touched the bee, but failed to lap it into its mouth. I am interested to know whether frogs are 'body-snatchers,' dead or alive?

The season, so far, is rather unpromising, but we do not despair, as in past years our July, or even August, harvest, has been well worth the gathering. As yet very little sealed honey has been taken in our county.—A Breconshire Amateur, *July 2nd.*

QUEEN INTRODUCTION.

[1711.] I have seen that some writers in your *Cottage Bee-keeper* speak very unfavourably of direct introduction of queens, and as you invite cottagers, like myself, to send you notes of their experiences in such matters, I venture to do so in the present instance. A bee-keeper close to me several years ago got a Ligurian queen, and now, though he has not quite pure Ligurians, all his bees, amounting to fourteen or fifteen stocks in bar-frame hives, have more or less Ligurian blood, and are by far the best bees I know. I was, therefore, most anxious last year to get a Ligurian queen myself, but the expense and risk of failure prevented me; however, this year the superiority of those bees was again so great and manifest over mine, that I took courage and got a Ligurian queen from Mr. Neighbour. By the advice of the before-mentioned bee-keeper, in whose employment I am, I determined to try direct introduction, and was further encouraged to do so by having just heard at the time from another bee-keeper that he had obtained a queen from Mr. Simmins, and being afraid to try direct introduction, had caged his queen, and had been unsuccessful in introducing her. On Thursday, the 31st of May, I received advice that the queen was coming by train. I went to the station some distance off, and had some delay in getting her; so that it was rather late when I reached home, and I failed in finding the queen in the hive into which I intended to put her. The next day was so wet that I could not open a hive, so, for fear of accidents, I made a hole in the top of the queen's box and put a feeder over it. Next day—Saturday, 2nd June—I found and removed the queen from a strong hive; I did this between one and two o'clock, and that night, after dark, I introduced the Ligurian. I kept her an hour before alone and fasting; I then, as quickly as I could, opened the hive, raised the edge of the quilt between the second and third frames from the back (I have my frames parallel to entrance), blew in a good puff of smoke, and ran in the queen and shut it up as quickly and quietly as I could. I had before noticed that those combs were full of sealed brood just hatching out. Next day everything seemed to go on as usual in the hive, and on Tuesday I opened it, and was greatly disappointed when I could not find a single egg in it or see the queen, and found two sealed queen-cells. My adviser was with me, and he made me cut out those cells and shut up the hive quickly without waiting to search for the queen. The weather since has been bad, and I did not again open the hive till to-day (Wednesday,

13th June), when, on taking up the two frames between which I had put the queen, I found that all the old brood was hatched out, and every empty cell in both sides of the two frames had an egg in it.

The day was very windy and threatening rain, and my adviser, who was with me, made me, as I was very willing to do, shut up at once and leave very well alone. But I think I may say that I have been successful in introducing this queen by the direct method, and I think under rather unfavourable circumstances. I have only known of seven queens, including this one, having been introduced in this neighbourhood, three by the direct method, all of which succeeded, and four by caging, three of which were failures.

On first opening the hive I was sure I had failed, though I was told there was a considerable chance that the queen was all right, but had not commenced to lay; and was greatly discouraged, as the loss would be a serious one to me, and one which I could not afford to risk again.

My employer and adviser has always assured me that he believes that there is quite as much risk of losing a queen after releasing her from the cage as there is in direct introduction if the latter is properly and carefully performed, and I fully believe that it is the case. It is rather curious that I should have got my queen from Mr. Neighbour, who does not recommend direct introduction, and that the man who got his queen from Mr. Simmins, who strongly recommends that method, should have been afraid to try it and caged his queen. I think the principal things to be attended to are, that the queen should be alone and fasting for over half an hour before she is introduced, that she should be introduced after nightfall, that it should be done as quickly and quietly as possible, and that the hive should not be opened until, at the earliest, the third day after.

As there is great difference of opinion as to the merits of the various methods of queen introduction, I give my experience while it is fresh in my mind and for what it is worth. If I was doing it again, I would wait at least another day before I opened the hive.—A Co. Limerick Cottager.

BEES IN A RIDDLE.

[1712.] For several days a number of bees (perhaps forty or fifty) have been busily at work in what appears to be nothing more than a riddleful of ordinary potting soil. We first noticed them on Saturday 9th, where they continued in spite of showers. They fly across from the hive, a distance of fifty yards, alight upon the soil, and there set to with a great show of diligence burrowing, and, as far as their strength will allow, turning over the soil. They prefer those places that have been turned over most recently. When they have loaded themselves to their own satisfaction they make the return trip, only to repeat it again and again during the day.

The soil consists of rotted turf, silver sand, and cocoanut fibre. To prevent the blight from taking the seedlings (asters) this had been sprinkled with *Fir-tree oil*. Thinking, perhaps, the oil might be the attraction, we sprinkled some leaves with it; this, however, the bees disdained to notice. As this has caused some curiosity in the neighbourhood, we should be pleased with a line from any of your better-informed correspondents.—Amateur-not-Expert

BUCKWHEAT: ITS CULTIVATION AND VALUE.

[1713.] Buckwheat is called the lazy man's crop, because, no matter how poor the cultivation, he is pretty sure to get something. But I find there is no crop that responds quicker to good treatment. The cultivation of buckwheat for grain or honey is the same; but in selection of soil and time of sowing there is a material difference. To yield honey freely the soil must be strong enough to produce a good crop of corn or potatoes. A field that, with good cultivation, would produce a fair crop of grain, nine times out of ten would not furnish a pound of honey.

If I were sowing expressly for honey, I should proceed as follows: If the field to be sown were greensward, I would plough it as soon as the frost has left the ground in the spring, and let it lie until about the first of June. At that time I would select some very warm day and go over it several times with a two-horse cultivator. My reason for taking a warm day is, that I should be sure to kill all weeds and grass. If the field has been cropped the previous season, I would cross-plough in place of cultivating.

Buckwheat is such a quick-growing crop; the point is to get the soil loose and light as deep as the roots go, and also have the surface pulverised very fine for a seed-bed. The time for sowing with us is the 10th of June, but would vary according to locality. In average seasons the bees commence storing honey forty-five days after sowing; and as there should not be a break between basswood and buckwheat, it would be impossible to fix a date. The seed should be soaked twenty-four hours and then rolled in plaster or quicklime; this insures an even catch, and also gives the young plants a start. The quantity of seed for smooth ground would be half a bushel per acre, for rough and uneven ground double the amount will be required. Most grain where a small quantity of seed is sown, will send up several stalks from each grain. Buckwheat sends up but one from this main stalk. Side branches are thrown out, on which the bulk of the crop is matured; and unless the surface of the ground is very smooth, the stalk cannot be cut below the side branches. When more seed is used per acre, the branches are thrown out nearer the top of the stalk, and there is trouble in harvesting.

In regard to soil: if I could have just what I wanted, it would be a sandy loam. When grain is the only object, I would sow the 15th of July. I have had a good yield of grain when sown early; but on an average my late sowing does much the better.—H. T. Bishop (*Gleanings*).

'THREE SCEPTICS CAME, THREE CONVERTS LEFT.'

(*See 'British Bee Journal,' July 5th*, 1888.)

Three sceptics went training it into the East,
Down into the East as the sun rose high,
Of their favourite hobby expecting a feast
As onward to Hazeleigh the train brought them nigh,
For bees must work, and learners must weep,
When skill is wanting and stings are deep,
While the hive in the evening is humming.

Three sceptics went into the garden fair,
And they wrung the carbolic cloth nearly dry
Though they doubled its power, and feel that their share
Of the business would soon be to hastily fly;
But bees don't sting, and sceptics don't fear,
With carbolic cloth to draw ever so near
While the hive in the evening is humming.

Three converts went back by train to town
In the evening glow of that long June day,
While the 'Secretary' talked and the 'Sage' replied,
And 'X-Tractor' kept smoking his short, black clay
For bees will work, but never will sting,
So the praise of carbolic we three will sing
While the hive in the evening is humming.

Neophyte.

THE DESTROYERS DESTROYED.

One summer day a bee had sought
To steal the sweets of flowers away;
A truant boy the bee then caught,
But stung!—he threw the thing away.

A blackbird perch'd upon a bower,
Beheld these acts with lively joy,
And hopping 'neath an ample flower
He caught the bee that stung the boy.

A weasel saw the bird's success,
And thought the bee had lost its sting;
And hoping for a charming mess,
He caught the blackbird by the wing.

An eagle, with his burning eye,
Beheld how each had play'd his part,
And stooping from the azure sky,
He caught the whole three at a dart.

And soaring through the sunny air,
To feast within his wind-rock'd nest,—
A death-fraught ball his breast did tear,
And brought him down with all the rest.

The eagle let the weasel go,
The weasel loos'd the sable bird,
The bird let fall the bee, but, lo!
Its spark had fled—it never stirr'd.

The blackbird had a broken wing,
And soon away existence sigh'd;
The weasel, poor side-bleeding thing,
Gave one sad look—and then it died

The eagle, great and gorgeous, king
Of all the feathered tribes on high,
Drew in his broad, expansive wing,
And nobly laid himself to die.

The man stood o'er this scene of death,
And reasoning with himself he said,—
'The eagle stopp'd the weasel's breath,
The weasel low the blackbird laid:
The blackbird kill'd the humming bee,
And I have shot the eagle free;
So man can insect, bird, and beast,
Submissive make to his behest!'—J. S.

—*Family Friend*, 1852.

QUERIES.

Will any reader answer me the following two questions?—1st. When a first swarm leaves the hive, headed, of course, by the old queen, where is the young queen? Is she still in the queen-cell? I ask, because lately I had two large swarms from bar-frame hives, and although I looked each hive carefully through after the swarms had left I could find no live young queen, but plenty of queen-cells in all stages. 2nd. How are skeps *inverted* and then supered? By inversion, I imagine the skep is turned upside down and then the super crate is placed over it. If so, how do the bees get in and out?—AMATEUR.

REVIEW.

REVISTA APICOLA is the title of a new paper devoted to bee-keeping in Spain. It is edited by D. Francisco F. Andreu, and treats of modern bee-keeping. Spain has long been behind other countries in the production of honey, although its flora is rich, and abundance of honey could be produced which, for flavour and quality, would be equal to the best, but ignorance and prejudice have prevented the introduction of improved methods. Of late, however, some of the wealthy proprietors have taken the matter up, and have introduced the frame-hive, generally the English standard, owing in a great measure to the circulation of the French translation of our *Bee-keeper's Guide-book* and the exertion of Mr. Andreu. A translation of our *Guide-book* into Spanish was called for, and was undertaken by M. E. de Mercader-Belloch. We understand that now there are many who have taken to keeping bees, mostly in hives of the British standard, although there are some who have adopted the Dadant hive. The *Revista Apicola* is a modest little paper of eight pages, and appears twice a-month. The fact of its being published shows progress, and we wish it every success, and hope it may not be long before it grows to maturity, and becomes the recognised organ of bee-keeping in Spain.

Echoes from the Hives.

Fairspeir, Ascott, Oxford, July 1st, 1888.—Another week has gone, very cold and showery. Bees have scarcely done anything except swarm unnecessarily. My seven hives last season yielded 61 lbs. each on the average. So far I have only taken *two* sections this season. I fear it will be a poor look-out for people who get their living by bee-keeping, at least in this district. The hot weather last summer completely destroyed the white clover, our great source of honey, luckily there is plenty of charlock near, and beans, though the bees do not seem to have taken to the latter much yet. At any rate our season will be over in a fortnight or three weeks, so if we have a cold wet July it will be far from a cheerful time for us.

Beverley, July 2nd.—Weather no better than when I wrote last. Bees have now not gathered an ounce of honey for a long time, and all are busy killing off drones, so that all chance of any surplus for this season is gone.—F. BOYES.

North Devon, July 3rd.—Some few stocks fairly strong, but no honey is coming in, scarcely enough for present need; consequently nothing in sections. With north-east wind the bees appear barely able to keep alive. There are but few more bees now than a month ago. Altogether it is a most depressing state for a poor—RUSTIC.

Carlton, Mon., July 3rd.—June opened dull, with rain and thunder. June 9th, heavy rain; no honey coming in. June 28th, rain and cold north-east winds; no honey. June 30th, fine; full of bees supers. July 5nd and 3rd, wet again, with a strong gale from south-west; all hope abandoned.—W. W.

Lismore, Ireland.—It is about time for me to send you a report from this part of the country. I cannot say I am quite satisfied with the wintering of my stocks. Two, which certainly had old queens, turned out republicans in the spring, and soon came to an end. A third, which went into winter quarters with a young queen, gave the same result, and two 'condemned-bee' lots succumbed to spring dwindling. Thus from sixteen stocks I am reduced to eleven, one more than I began 1887 with, but these have, all but two, young vigorous queens, and are, save one, in good forward condition. But only one stock is what I think all, or most all, *ought* to have been, *i.e.* a really first-class hive, with one set of twenty-one sections sealed over, and at work in forty-two boxes. Why this hive should be so much better than the others, I cannot tell. All were well mulled up, and had abundant stores; indeed, my main anxiety as to food was the over-abundance of it, and on April 15th I took three superb slabs from a colony where I feared the queen had not enough space for laying. Though I got such a lot of comb honey last season, and extracted, as I thought, the 'uttermost drop,' the hives were all thoroughly well supplied, and spring feeding was almost a nominal thing, uncapping the stores taking its place. November was a fine month here, so I suppose they got a lot of ivy honey. None of the stores seemed candied, and they had a cake of candy apiece overhead, which they amused themselves with, but did not quite consume in any case. The season was very open, and

bees flying till January 15th or so, when it became cold, and we had some severe night frosts in March; but every hive was *thoroughly* healthy, and I saw not a trace of disease of any sort, or even of chilled brood, which might have been expected. There has been a magnificent bloom on the hawthorn, and had all my hives been ready by June 1st (as I feel they ought) a splendid early harvest might have been had, such as my one 'show' hive has secured. I have now seven hives with bees well settled to work in section supers, and two hives supered and working for extracted honey. I am trying these with queen-excluder this season, as my results have not been satisfactory without, my three-tiered hives giving me less honey last year than my inverted skeps worked with excluder. I am inverting one skep to-day. My second one, I regret to say, is rather weak, the queen having evidently given out. I have a chance swarm, with which I will strengthen it to-morrow and invert next day. I hope to have as good results with this plan this year as last. Certainly nothing could be better than the way it answered last year for extracting, but I had only a middling success with sections over inverted skep. There is an improvement in the weather, and bees are working furiously. My two remaining hives will be ready for supering with bars for extracting in a day or two, and I have plenty of old combs ready for their use, so there will be no time lost comb-building. —F. W. C.

P.S.—Since writing the above I have inverted a cottager's skep. It was inverted last night, and 'risered' with a box containing nine bars, and they are all up in it this morning, working splendidly. I gave one old comb in centre, with a few ounces of honey in it; the rest bars with foundation-starters only, and they *have* started. The floor-board has an opening, covered with excluder-zinc, about 6 in. square.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Holmfield.—1. *Young Queens.*—The three bees sent are unfertilised young queens, and they also appear to have been somewhat retarded in their development, but show no signs of disease. 2. *Uniting.*—We should recommend you to unite the second swarm (cast) and stock, and at the same time requeen the first swarm either with a purchased queen, or, if expense is an object, then with the queen from the cast, destroying the old queen now with the first swarm. 3. *Transferring.*—To get the old stock into an Association sized hive, get your new hive ready with about three or four frames, having sheets of foundation fixed; set it where the stock now stands, place stock on ground close by the side of it. Lift back frame from old stock and shake the bees into the new hive; if that comb has no brood, set it on one side *in a box*; proceed with remaining frames one by one, but when you find one with brood, cut out the comb and fix it in one of the new frames by tying it with tape, which can be removed in about three days. Take care to keep the comb right way up. Now, if your cast is on Association-sized frames, you can space the frames in new hive to double distance. Spray this lot and also the cast with thin syrup scented with peppermint; place combs and bees from cast alternately with those already in the new hive, taking care that the queen belonging to the cast is not put into the new hive: she should be caught and placed in a box with a piece of honey-comb and a few of her own bees and kept warm till after dark. Catch the old queen with the first swarm, destroy her, cover up that hive, leave till after dark. Take the queen to be introduced out of the box in which she has been kept, and put her into an EMPTY box for thirty minutes, keeping her warm (about 70 to 80 degrees). Now, by the light of a lamp, raise the quilt at the back of the hive, puff some smoke in among the bees to drive them down; let the queen run down between the frames, cover up, and leave the hive untouched for quite forty-eight hours. Trusting you will succeed.

J. Holden.—1. *Best Covering for Bees next Frames.*—Enamel cloth at all times, providing the colony of bees is strong, over the enamel quilt plenty of warm covering and sufficient bottom ventilation. 2. *What proportion of Drone-comb should there be in a hive having ten frames?*—Forty or fifty square inches will be sufficient; we usually insert the comb from a section $4\frac{1}{4}$ by $4\frac{1}{4}$, and find this ample.

J. Fenwick.—*Dead Queens.*—Both queens were virgins. Queens reared by introducing a frame of brood into a queenless colony—they usually being weak—are almost certain to be stunted in their growth, and are not at all suitable for the production of good colonies.

A Puzzled Lady.—1. *Expert of Lancashire and Cheshire B.K.A.*—Apply to F. C. Carr, Higher Bebington, Cheshire. 2. *Combs fallen down.*—This is a job that would be best done by an expert; the above-named gentleman will put you in the way of obtaining such assistance. 3. *Condemned Bees.*—They ought to be put on combs, but combs alternated with foundation is very successful.

P. Mortimer.—*Hive dying out.*—Yours was a bad case of dysentery.

Thos. Griffiths.—*Dead Queen.*—The queen was smashed when received, but we should judge her to be fairly young and of the black variety. On account of her condition we could not inform you as to the cause of death; she had not been 'balled:' it may have been a queen from a 'hunger swarm' trying to enter and been thrown out.

N. D. Rustic.—*Bees vacating hive.*—This with a very strong colony and plenty of stores, we may say is never experienced, but with weak ones it is not of infrequent occurrence. Robbing will often cause this in spring, often no cause can be assigned.

William Hull.—*Sample of Foundation.*—Pure.

Despondent.—*A would-be Colonist.*—Kindly inform us to which colony you propose going, and we should then be enabled to furnish you with the special information desired.

Mr. Castle.—The comb forwarded does not show any symptom of foul brood; neither is the smell objectionable. The occurrence of dead brood is not infrequent, but the cause of it is not always to be attributed to the existence of foul brood. Still if there are any fears of the disease which appears to be approaching your apiary reaching you, it would be advisable to make use of disinfectants, salicylic acid solution, camphor, &c.

X. Y. Z.—1. *Drowsy Carniolans.*—We have no doubt they were starving, and had fallen on the floor-board from sheer weakness. It is false economy to withhold say a quarter of a pint of syrup in the evening when bees are unable to gather honey (unless they are very well provided with stores) during the spring breeding season. Recollect that during really warm weather Carniolans require plenty of room and a wide entrance, as they increase very fast. Doubtless you had been troubled with a 'hunger swarm.' Is there any brood in this hive? Examine and report exactly how you find it, we may help you further. 2. *Turning out Drones.*—Your bees are short of stores and should be fed gently. 3. *Bees carrying in Pollen.*—Pollen is stored considerably in excess of actual daily wants at some seasons. Queenless colonies that are also broodless do not carry in pollen as a rule.

Beeswing.—*Excess of Pollen.*—Any not required for other colonies should be melted up. Some of our American friends are much troubled in this way, while others suffer from an opposite condition.

FELIX.—*Glazing Lee's Sections.*—Try Woodley's tin protectors. We have not glazed any of this make of section.

THOMAS.—*Hatching Brood.*—At this time of the year any hive having a healthy fertile queen will not be without brood. Your plan is to put new comb-foundation in centre of brood-nest, and as fast as the outside combs are found to be free from brood, remove them and insert fresh ones in the centre. The queen prefers new built comb to lay in. We have used an ordinary garden syringe having a very fine rose to spray combs when many were to be done. Loaf sugar or Dutch crushed should be used for syrup, not Porto Rico.

E. PHILLPOTT, WOOD GREEN, E. G. ELLIOTT.—*Super Foundation.*—The samples shall be tested, and replies given next week.

L. W.—1. *Driving, &c.*—Properly done. 2. *Transferred brood.*—All safe if covered over while being carried to hive. 3. *Frames partly filled.*—Leave them as they are. 4. *Feeding.*—Give quarter of a pint each evening for a week if bees cannot get out to gather honey. 5. *Reducing space.*—We should advise you not to do this just yet. If you did you would remove foundation rather than comb. 6. *Queen lost.*—She may be safe. Look next Saturday, see if there are any eggs or very young grubs; if not, if there are any queen-cells; if so, destroy all but one. 7. *Comb.*—This is healthy. *Supering.*—Yes, directly you are satisfied the queen is safe and the limes in bloom. Reducing the brood-nest to not more than eight or nine frames. 9. *Keeping Bees.*—This is a disputed point yet. Your neighbours would have very great difficulty in proving annoyance.

[We thank you for your very explicit mode of putting your queries, and shall at all times be pleased to help you.—ED.]

A. W. HOWSE.—1. *Adjusting Frames.*—Remove dummy, space frames, commencing from the back of the hive, and insert as many new frames as there may be room for in front. One-inch starters will do for them. 2. *Variety of Bees.*—Those sent appear to be hybrids, but queens vary a good deal in colour. 3. *Crown-boards.*—Their advantages and disadvantages have been much discussed, and we prefer not to reopen the question. We do not use them. 4. *Supering.*—Do it at once, and rest content with one rack this year.

A. TURKINGTON.—The bees forwarded were virgin queens, which have been hatched in cells overlooked by you when excising queen-cells.

CORRECTION.—Page 325, in Mr. G. J. Buller's letter, three lines from end, *for* natural bees-wax *read* natural white bees-wax.

SHOWS TO COME.

July 19–20.—Cambridge Agricultural Society at Cambridge. Secretary, R. Peters, 7 Downing Street, Cambridge.

July 25, 26.—Leicestershire B.K.A. Secretary, Edwin Ball, Waltham, Melton Mowbray.

August 1, 2.—Glamorganshire Agricultural Society's Show.

September 5–7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 1st.

Business Directory.

HIVES AND OTHER APPLIANCES.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin
APPLETON, H. M., 256A Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BURTT, E. J., Stroud Road, Gloucester.
EDEY & SON, St. Neots.
GODMAN, A., St. Albans.
HOWARD, J. H., Holme, Peterborough.
HUTCHINOS, A. F., St. Mary Cray, Kent.
MEADHAM, M., Huntington, Hereford.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.
WALTON, E. C., 82 Emmanuel Street, Preston.
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SIMMINS, S., Rottingdean, near Brighton.

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HOWARD, J. H., Holme, Peterborough.
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HONEY GLASS MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BLOW, T. B., Welwyn, Herts.
PEARSON, F., Stockton Heath, Warrington.

NOTICE.

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Editorial, Notices, &c.

NATIONAL CO-OPERATIVE FESTIVAL.

An interesting exhibition of the skill of workmen in their own trades will be opened at the Crystal Palace on August 18th, in connexion with the National Co-operative Festival. The competition will be amongst working men members of the Industrial Co-operative Societies throughout the kingdom, and the special facilities offered to them to compete, by their respective societies agreeing to pay carriage on all exhibits, should open the door to a very large and representative display of individual work. The prize-list is a good one, and the Council of the Society of Arts—who have promised to appoint the judges—will also award one of their bronze medals in eighteen of the principal classes. In addition, there are many classes for all kinds of amateur work, women's work, and children's work, and for collections of interest, besides the very large display of flowers, fruit, vegetables, and honey, from cottagers' gardens, to be held on the same day. The Secretary, Mr. W. Broomhall, 1 Norfolk Street, Strand, will supply any further particulars.

MINORCAN BEES.

We are highly pleased with the public spirit and the perseverance which have actuated Mr. F. C. Andreu, of Port Mahon, Minorca, to make another, and, we rejoice to say, a successful attempt to introduce the bees from his island to the notice of the British bee-keeper.

In June, 1886, Mr. Andreu made his first attempt to introduce a queen from Minorca. In consequence of the packing of the queen and bees not having been performed with due attention to their requirements and to the distance they had to travel, that experiment was without result. The queen reached us *in extremis*, and before she arrived at the apiary of Mr. Abbott, to whose care we desired to consign her, the spark of life had fled. Mr. Andreu having described the race of Minorca bees as 'hardy, gentle, and prolific,' and as possessing many of the qualities of Carniolans, it created in us a desire to have a further acquaintance with the bees of his island. In a recent communication to *Gleanings*, Mr. Andreu seems to have a fear that his queens are too prolific, 'as the greater part of the stocks, instead of filling the combs with honey, allowed the queen to monopolise them.'

Two years have passed away since that first attempt was made, and during the interval great progress in apiculture has been made in Spain, in a great measure due to the enterprise and example set forth by Mr. Andreu. Bee-keeping in Spain till very recently has been carried on in the old-fashioned style, and amongst the bee-keepers there are extremely few who had any knowledge of modern hives. The hives there used are varied in form, and in the materials with which they are constructed. Some are round, others square, or long, and are made of cork, basket-work, covered with mud, straw, or wool, and hollowed trunks of trees. It would appear, in fact, that little progress has been made in that country either in the management of bees or in the construction of hives since the time (A.D. 50) when Columella, himself a native of Spain, wrote his *De Re Rustica*. In that work he describes the hives of his day as made of cork-bark, 'fennel giants,' willows woven together, wood of a tree made hollow or sawn into boards, potters' earth, and those 'made of dung or built of brick;' and his account of the management of bees is not very dissimilar to that practised amongst Spanish cottagers of the present day. And yet the flora of Spain is rich in honey-producing plants and shrubs, and an abundance of honey could be there produced, which for quality and flavour would bear a favourable comparison with that of any country in Europe.

But during the last few years a marked improvement is to be noted in the culture of bees by the inhabitants of Spain, and the ignorance and prejudice which have hitherto prevented the introduction of new and improved methods are gradually melting away. This we attribute, in a great degree, to the example, enterprise, and influence of Mr. Andreu. In a letter addressed to the *Bulletin d'Apiculture de la Suisse Romande*, December, 1886, he says:—'When we first imported new hives from England, a few years ago, they proved to be a new article to everybody; but the earliest results obtained from them were so good that they soon became a subject of general conversation and of articles in the press. Several bee-keepers adopted our hives as soon as they had seen the advantages they offered and the results we had obtained from them.'

Since writing the above, Mr. Andreu has considerably enlarged his apiary, and done much to popularise bee-keeping. In December of last year his home apiary had increased to thirty hives, and he had started another in the interior of the island of about fifty more, which it was his purpose to increase to a hundred in the spring of this year. This he accomplished by transferring some ninety old-fashioned cylinder hives into forty-five bar-frames.

Mr. Andreu—or rather we should say his eldest son—has recently established a factory for the manufacture of bee-keeping appliances, and he has a large sale for his 'bee-fixtures' in many parts of Spain, where bee-keeping has become quite a popular pursuit. Mr. Andreu has also started a monthly periodical, called *Revista Apicola*, which doubtless will have the effect of introducing the modern methods of bee-keeping into Spain. We may

also say that the translation of Mr. Cowan's *Guide-book* into the Spanish language will prove of great assistance to Mr. Andreu in his public-spirited endeavours to effect a change in the style of Spanish bee-keeping.

We note from a letter from a correspondent, who writes himself 'John Peel' (p. 344), and whose Roman hand we are pleased to see once more, that a queen recently forwarded by Mr. Andreu to that gentleman met with a mishap in transit. On Friday last we received a queen with a few attendants from Mr. Andreu, which we lost no time in transferring to the hands of our former *chef*, Mr. Abbott, who joyfully accepted the trust of taking charge of her. An account of her safe introduction from his graphic pen will be found on p. 345, and no doubt in due time he will furnish us with a report of her progress, and that of her progeny.

We desire to take this opportunity of tendering our thanks to Mr. Andreu for his kindness in forwarding the queen-bee, and to offer him our congratulations on the success so far attained by his endeavour to introduce a new race into this country.

ASSOCIATIONS.

THE ROYAL AGRICULTURAL SOCIETY'S SHOW.

The annual exhibition of the British Bee-keepers' Association, held in conjunction with the Royal Agricultural Society, took place at Wollaton Park, Nottingham, on the 9th to the 13th of this month. The weather was most unpropitious during the early part of the week, and the number of persons visiting the show grounds on the days on which the entrance-fees were 5*s.* and 2*s.* 6*d.* was much less than on any former year. The wind was very cold, and heavy showers of rain were almost incessant during the day. On Thursday there was a slight improvement in the weather, it was much milder and the showers were not nearly so frequent; by eleven o'clock the place began to have a very different appearance from the three previous days.

The different railway companies had each a great number of excursion trains, and thousands of persons flocked to the grounds from all parts of England. We also understand that the mill and factory hands had a holiday, and on the first shilling day the numbers beat all previous record.

The show grounds occupied some seventy acres of Wollaton Park, the seat of Lord Middleton, who kindly lent it for the occasion. The whole of the ground is quite flat, but has clumps of trees to relieve it, and is surrounded by well-wooded scenery, which forms a charming frame to the whole picture. We have never before seen the Royal Agricultural Show occupy a more picturesque spot, and never has the yard been arranged with greater effect, or the various exhibits more successfully grouped.

On Tuesday the annual meeting of the members was held, and Her Majesty the Queen was elected president for the coming Jubilee year of the Society, and the Show for that year is to be held at Windsor.

At this year's exhibition the entries have been larger than on any previous year, except 1879, when it was held at Kilburn. There were in all 368 stands, containing 4717 distinct articles. The Implement yard alone consisted of about *two miles* of shedding, having frontages for the most part on two sides. Add to this, the shedding for live stock, which would make in all about *seven* miles that a visitor would have to walk along the frontages alone to see the whole of the show.

In the Bee department, the bee tent had during the earlier days of the week, a very good attendance of attentive listeners, and very many questions were asked by the anxious to be instructed on some particular points in connexion with bee-keeping, which were answered in a very ready and pleasant way by Mr. John Howard, of the Model Apiary, Holme, near Peterborough, the expert appointed by the B.B.K.A. for the season. Mr. Howard was able to show that the ordinary routine work of the bee tent, driving, catching the queen, and returning the bees to the hive with their queen and so forth, could be supplemented in a variety of ways with bees in frame-hives. Much useful instruction was given and was fully appreciated, all seeming gratified with what they had seen and heard. The uses and advantages were practically illustrated in a way we have never before seen in a bee tent.

After one of the lectures, a clergyman present proposed a vote of thanks to the lecturer; he said he knew nothing of the lecturer, that he was a perfect stranger to him, and that he had never seen him before; he said the lecture was most interesting and had been given in such an instructive and pleasant way, that he felt sure all would join with him in heartily thanking the lecturer; which they did with a hearty cheer.

On Thursday the bee-tent was a great source of attraction; it was absolutely besieged, the tent frequently had to have its ropes, pegs, &c., adjusted, the pressure of the people anxious to see was so great. The operating portion in the centre was taken by storm, and filled with people who, seeing the expert could handle the bees with apparent impunity, gained confidence and pressed into the enclosure as thick as they could stand, thoroughly enjoying it; and although the bees were flying about and settling on them, few, if any, were stung. There appeared to be many country people, apparently bee-keepers, anxious to learn something of the modern way of keeping bees.

One remark of Mr. Howard's is worthy of attention. In answer to a question as to foreign races of bees, he said *he preferred the English bees to any*; he had some time ago spent 15*l.* in the purchase of the foreign races to stock his apiary, and that he considered he had thrown his money away, and gave the reasons that caused him to form that opinion.

Sufficient has, we think, been said to show that Mr. Raitt's remarks in the *Record* were ill-timed. We believe there is much yet to be taught in the bee-tent by lectures of practical bee-masters; but it too often happens that lecturers are selected on account of their fluency of language, and not for their practical knowledge and experience; some manufacturers of bee-keeping appliances putting themselves into the position for the sake of grinding their own axes and selling their own wares.

The British Bee-keepers' Association having noticed in former years that in the class for the largest and best collection, &c., the competition was confined to two or three of the largest appliance manufacturers, and that the number of articles was swollen by many obsolete and useless things of little or no value, they therefore determined that they would specify such articles as they considered to be necessary in an apiary of any size, thinking that by limiting the number of articles to be exhibited, they would have a much greater number of competitors to exhibit, and that the smaller manufacturers would be able to compete with the larger ones on equal terms. The result has been most satisfactory, the number of entries having increased to ten.

The following is a schedule of the things to be included:—Class 184.—For the best collection of hives and appliances, to consist of the following articles (exhibits in this class to be staged by the exhibitor): 1 frame-hive, priced at 15*s.*; 1 ditto, priced at 10*s.* (*Note.*—These hives must be fitted with arrangements for storifying); 1 observatory hive, with bees and queen; 1 hive of straw or other material for obtaining either comb or extracted honey; 1 pair of section-crates ready for putting on a hive; 1 extractor; 1 slow stimulating feeder; 1 rapid feeder; 1 smoker or other instrument for quieting bees; 2 boxes of comb foundation, con-

taining 2 lbs. each, one thick the other thin; 1 veil; 1 swarm-box for travelling, capable of being used as a nucleus hive; 1 travelling crate for comb honey; collection of honey bottles, different varieties, not exceeding six in number. Each article to be priced separately.

Messrs. Geo. Neighbour & Sons obtained the first prize, a silver medal and 20*s.*; Mr. John H. Howard the second, a bronze medal and 10*s.*; and Mr. Thos. Blow was Highly Commended.

One of the objects the Committee had in view in limiting the articles in this class to useful things only was to some extent frustrated, for immediately after the awards were made, a large quantity of additional things were crowded on between the others, so that visitors could not tell that prizes had not been given for the whole, and turning of this into a sale-counter. We hope that this useful class will be continued another year, and that nothing will be allowed to be added to it after the award of the judges. Those who want a sale-counter should apply for space for the same, and pay for it in the regular way.

Class 185.—For the best and most complete frame-hive for general use. The hive shall consist of (1) a floor-board on four short legs; two chambers or body-boxes, equal in size, similar and interchangeable, both to have porches, with entrances capable of contraction or expansion, each chamber being capable of holding a set of ten or more standard frames, having strips of foundation fixed and two division-boards, but one set of frames and two division-boards only to be supplied. (2.) One case of 4½ by 4½ sections, with foundation fixed and separators, the case to be of such size as to admit of one chamber being used as a cover. (3.) A substantial roof sufficiently deep to cover a case of sections and afford ample protection to the whole hive, the price of each part, namely, stand and floor-board, body-box, case of sections, and roof, to be given separately, the whole not to exceed 15*s.*, unpainted.

This is the most important class of all, and there is always a very keen competition for the honours, and the ingenuity and skill of the manufacturers of hives are exerted to the utmost. At one time 15*s.* for a hive of this description would have been thought much too little, but there were fifteen competitors from ten different counties, all having exhibits, with hardly an exception, of considerable merit. With machinery and skilled training it is astonishing what can be done for this amount.

The first prize of 20*s.* was awarded to Mr. Charles Redshaw, of South Wigston, Leicester. This hive was well made of good red deal, and was compact and neat in appearance, and showed considerable thought and ingenuity. We will not say more of it now, as next week we hope to give a woodcut of it and a full description.

The second prize, 15*s.*, was awarded to Messrs. Abbott Bros. for a well-made hive of good material. It contained ten standard frames and dummy in each chamber, and appeared to be made throughout of ⅝ in. stuff; three section-cases containing seven sections each, one cotton and two grey flannel quilts, good roof, and floor-board. On the floor-board there were two strips of wood nailed, recesses being left between the double walls of chambers to fit over these. This we did not like, as it prevents sliding the hive on to the floor-board.

The third prize, 10*s.*, was awarded Mr. Thos. Blow, for a rather heavy-looking hive, very much over-porched. It was well made, of good material, and would take twelve frames and two dummies, one thin and one thick. It had his section-crate, roof, and floor-board, but no new feature. We think that ten frames are enough for a hive used for tiering up. When more frames are used they become too heavy for this purpose.

Messrs. Neighbour's hive was highly commended, and had there been any arrangement of groove or plinth to keep or slide the hives on one another or on the floor-board, we think it would have been placed higher. In the upper storey there was a clever arrangement by which it could be made the proper depth for containing 4½ by 4½ in. sections, or for frames 5⅜ in. deep for extracting. In both cases the proper bee-space only was left under.

Mr. A. T. Adams was highly commended for a very good hive, which we preferred as a storeyed hive to the third prize hive. It was well made, of good material and design.

Class 186.—For the best and most complete frame-hive for general use. The hive shall consist of (1) one chamber or body box, containing ten standard frames having strips of foundation fixed, two division-boards, entrance-porch, and floor-board, the chamber capable of being used with a second of the same pattern. (2.) One case of twenty-one sections 4½ × 4½, with foundation fixed and separators. (3.) A roof sufficiently deep to cover one case of sections at least, the price of each part, namely, floor-board, body box, case of sections, and roof, to be given separately, the whole not to exceed 10*s.* 6*d.* unpainted.

This was also a very good class, and contained fifteen entries. The first prize (20*s.*) was awarded to Mr. Chas. Redshaw, for hive of exactly the same design as that in the last class, one chamber only being omitted. The second prize (15*s.*) was awarded Mr. Baker for a very strong, well-made hive, the plinth covered the floor-board, and the roof, which fitted over the hive, was supported on pieces put up the angles to strengthen the joints. There was the usual case of twenty-one sections: this was a very cheap and useful hive. The third prize was awarded to Mr. Turner, of Radcliffe-on-Trent, and Messrs. Neighbour were Highly Commended.

Class 187.—For the best honey extractor, with arrangements for reversing the sides of combs, either automatically or by hand, without necessitating the taking out of the frames of comb or the wire-cage containing the same, in order to turn the other side for extracting. Mr. W. P. Meadows has again taken the first prize (15*s.*) in this class. The gearing is turned at the outside, and consists of a wheel with catgut band running down the side through two guides and round a horizontal wheel under the centre of the bottom of the extractor. The top of the extractor is entirely free. The square cage into which the frames are placed is open. An iron spindle is fixed at the bottom of the cage, and when in position runs *through* the cone that usually supports the case into the wheel underneath. The cage can be lifted out for cleaning, and returned in a second, ready for use without undoing any bolts or screws. This contains all his patented arrangements, and together makes a simple and perfect extractor. The second prize (10*s.*) was awarded to Mr. Howard for the Raynor, and Messrs. Abbott were H.C.

Class 188.—For the best two section racks, containing sections complete with separators, guide comb or foundation fixed ready for placing upon a hive, each rack capable of being placed above or under the other, price not to exceed 3*s.* 6*d.* each. Messrs. Neighbour were first (15*s.*) with Lee's patent hanging rack and sections. Mr. Blow was second (10*s.*), and Mr. Howard third (5*s.*), Mr. C. Redshaw was H.C.

Class 189.—For the best feeder for slow stimulating feeding, price not to exceed 1*s.* 6*d.* First prize (10*s.*) to Mr. Meadows; second (5*s.*), Mr. Chas. Redshaw; H.C., Mr. Webster; C., Mr. Blow.

Class 190.—For the best feeder for quick autumn feeding, capable of holding at least five pounds of food at a time, price not to exceed 3*s.* Mr. Meadows was awarded first prize (10*s.*) for an adaptation of the Raynor divisional crate as a feeder. The sections are taken out and two small boxes without lids 6 × 4 × 3 inches, with thin wood divisions about half-an-inch apart, are put in

the place of the sections, a thin piece of wood with ¼-inch fitted nailed underneath, rests on the top and gives bees space under; the boxes are kept ⅜ inch apart in the centre, to allow the bees to come up between the two, as well as at the ends. They are filled with syrup through holes in the boards which are covered on the underside with wire-gauze, and on the top with pieces of glass which are made to slide. They can thus be filled at any time without the escape of a bee. Mr. Howard was awarded second prize (*5s.*) for a feeder after the Canadian feeder, but we think the divisions were too far apart.

Class 191.—For the best smoker filled with the fuel proposed to be used suitable for burning, peat, wood, or other fuel. First prize, Messrs. Neighbour and Sons, 10*s.*; second, Dixon, *5s.*; Blow, H.C.

Class 192.—For useful inventions introduced since 1886. Special prizes according to merit. The most useful invention awarded a silver medal in this class was the foundation-fixing and section block of Mr. John H. Howard, illustrated in the *Bee Journal*, page 324. A silver medal was awarded Messrs. Neighbour and Sons for Lee's patent hanging crate with his frames and sections. A silver medal to Mr. A. Godman for a large-size foundation mill, which, we understand, was made to an order from Austria. Mr. Godman has specially designed tools for making these, and is we believe the only maker in England. It was a very fine machine. Mr. Blow was awarded a bronze medal for what he entered as registered and patented section cases. If it is the fastening that he claims a patent for, he is probably not aware that a patent has already been granted for a similar one to Mr. Chalmers, in December 1884, patent number 16552. Certificate was given to Messrs. Abbott, for his exhibit, number ninety-seven; to Mr. Blow, for grooved sections. Similar grooved sections have been in use for some years. Certificates were given to Mr. Howard for his comb filler; to Mr. Lowth, for what he calls his 'Unique' extractor for sections; and to Mr. Webster, for his arrangement for fixing foundation in sections.

The judges for the hives and appliances were—Rev. G. Raynor, Mr. Broughton Carr, and Mr. Walter Martin, who were most painstaking, and spent a long time in awarding the prizes, and we believe their decisions have given general satisfaction.

Class 193.—For the best twelve sections, $5\frac{1}{4} \times 6\frac{1}{4}$ (width optional) of comb-honey. In this class there were twelve entries, and a few were able to send, and those, we believe, were last year's sections. Messrs. Sells & Sons took first prize, 20*s.*, and Mr. H. Beswick the second, 10*s.*

Class 194.—For the best twelve sections, $4\frac{1}{4} \times 4\frac{1}{4} \times 2$, of comb-honey. There were thirty-two entries in this class, but on account of the badness of the season only six were staged, and the majority of these were last year's honey. 1, C. Atkinson, 20*s.*; 2, H. Beswick, 10*s.*; 3, Sells & Sons, *5s.* We noticed some very nicely-filled sections of Mr. Wm. Woodley's of this year's, they were evidently from sainfoin, being very yellow in colour; and we suppose this was the reason they did not take first honours, the management being far superior to the others, which we believe were clover of last year.

Class 195.—For the best twelve sections, $4\frac{1}{4} \times 4\frac{1}{4}$ (width optional), of comb-honey. There were eighteen entries in this class, five only were staged—1, H. Beswick, 20*s.*; 2, Sells & Sons, 10*s.*; 3, W. Woodley, *5s.*

Class 196.—For the best twenty-four 1-lb. glass jars of run or extracted honey. Approximate weight. There were thirty-six entries in this class, seven only were staged, most of it old honey. 1, A. Simpson, 20*s.*; 2, J. H. Howard, 10*s.*; 3, H. Beswick, *5s.*

Class 197.—For the best twelve 2-lb. glass jars of run or extracted honey. Approximate weight. There were twenty-one entries in this, but few staged. 1, J. H. Howard, 20*s.*; 2, A. Simpson, 10*s.*; and, 3, H. Beswick, *5s.*

Class 198.—For the best exhibition of honey from one apiary, in quantity not less than one cwt. There were eleven entries, but few staged. 1, A. Simpson, 30*s.*; 2, J. R. Truss, 20*s.*; 3, Sells & Sons, 10*s.*

Class 199.—For the best exhibit of English bees-wax, not less than 14 lbs., in half and quarter-pound pieces, price to be stated. In this class six entered, but only three staged. 1, Blow, 20*s.*; 2, Abbott Bros., 10*s.*; 3, H. C. Woodley.

Class 200.—For the best and most complete set of apparatus required for making comb-foundation from bees-wax, as imported or otherwise. It must consist of a strong and suitable paraffin oil stove for melting the wax in a proper steamer or vessel surrounded with water, dipping tank set in a larger vessel with water between to regulate the temperature, four dipping boards and a foundation machine for making standard-sized sheets of brood foundation. The whole to be worked in the presence of the judges, and for one hour on each day of the exhibition if required The proper temperatures of the wax when sheets are being dipped, and also when being passed through foundation machine to be stated. The price of each part, namely, oil-stove, vessel for melting bees-wax, dipping tank apparatus, and boards, and foundation machine to be given separately.

There were five entries, but only three staged. Mr. J. H. Howard was awarded the silver medal and 20*s.* for a very excellent arrangement of apparatus (manufactured by Mr. Meadows, with the exception of the foundation mill), which, considering the cold wind and the exposed situation, did excellent work. Mr. Godman took the bronze medal and 10*s.* for a very compact arrangement, but his lamps were hardly powerful enough for so exposed a situation. Great interest was taken in this apparatus and competition, and it is to be hoped the Committee will offer similar prizes another year, and provide a more suitable place for working it should the weather be cold.

Class 201.—For the best and most ready way of testing the purity of beeswax, its melting temperature, its freedom from fatty matter, and all other impurities and adulterations, with thermometer and any apparatus or chemicals necessary to carry out the same.

In this class there was only one entry, and the prize was withheld.

Class 202.—For the most interesting and attractive exhibit of any kind connected with bee-culture not mentioned in the foregoing classes.

The silver medal was awarded to Abbott Bros. for a splendid collection of plants from which honey is obtained, each specimen in a separate frame glazed, the colour, &c., being preserved in a wonderful way. The bronze medal was awarded to Mr. Watkins for collection of lantern slides. Certificates were awarded to Messrs. Abbott Bros. and Mr. Griffin.

The same gentlemen acted as judges in the honey classes, and the Committee are to be congratulated on the selection they made.

The following are the list of awards:—

Class 184.—For the best collection of hives and appliances.—1, Neighbour & Sons, 127 High Holborn, and 149 Regent Street, London; 2, J. H. Howard, Holme, Peterborough; he., T. B. Blow, Welwyn, Herts.

Class 185.—For the best and most complete frame-hive for general use.—1, Charles Redshaw, South Wigston, Leicester; 2, Abbott Bros., Southall, London; 3, T. B. Blow; he., Neighbour & Sons; hc., A. T. Adams, Crick, Rugby.

Class 186.—For the best and most complete frame-hive for general use.—1, Charles Redshaw; 2, W. B. Baker, Muskham, Newark; 3, Turner & Sons, Radcliffe-on-Trent; he., Neighbour & Sons.

Class 187.—For the best honey extractor. 1, W. P.

Meadows, Syston, Leicester; 2, J. H. Howard; hc., Abbott Bros.

Class 188.—For the two best section-racks.—1, Neighbour & Sons; 2, T. B. Blow; 3, J. H. Howard; hc., Charles Redshaw.

Class 189.—For the best feeder for slow stimulating feeding. Price not to exceed 1*s.* 6*d.*—1, W. P. Meadows; 2, Charles Redshaw; vhc., W. B. Webster, Binfield, Berks; c., T. B. Blow.

Class 190.—For the best feeder for quick autumn feeding, capable of holding at least 5 lbs. of food at a time. Price not to exceed 3*s.*—1, W. P. Meadows; 2, J. H. Howard.

Class 191.—For the best smoker, filled with the fuel proposed to be used, suitable for burning, peat, wood, or other fuel.—1, Neighbour & Sons; 2, W. Dixon, 5 Becket Street, Leeds; hc., T. B. Blow.

Class 192.—For useful inventions introduced since 1886.—Silver medal, J. H. Howard; silver medal, Neighbour & Sons; silver medal, A. Godman, of St. Albans; bronze medal, T. B. Blow; certificate, Abbott Bros.; certificate, Thos. Lowth, Brant Broughton, Newark; certificate, T. B. Blow; certificate, J. H. Howard; certificate, W. B. Webster.

Class 193.—For the best twelve sections, $5\frac{1}{4} \times 6\frac{1}{4}$ (width optional), of honey comb.—1, Sells & Sons of Uffington; 2, H. Beswick, of Tibenham, Long Stratton.

Class 194.—For the best twelve sections, $4\frac{1}{4} \times 4\frac{1}{4} \times 2$, of comb-honey.—1, Charles Atkinson, of Tockwith, York; 2, H. Beswick; 3, Sells & Sons, of Uffington.

Class 195.—For the best twelve sections, $4\frac{1}{4} \times 4\frac{1}{4}$ (width optional), of comb-honey.—1, H. Beswick; 2, Sells & Sons; 3, W. Woodley, Newbury, Berks.

Class 196.—For the best twenty-four 1-lb. glass jars of run or extracted honey (approximate weight).—1, A. Simpson, of Mansfield Woodhouse; 2, J. H. Howard; 3, H. Beswick.

Class 197.—For the best twelve 2-lb. glass jars of run or extracted honey (approximate weight).—1, J. H. Howard; 2, A. Simpson; 3, H. Beswick.

Class 198.—For the best exhibition of honey from one apiary, in quantity not less than 1 cwt.—1, A. Simpson; 2, J. R. Truss, of Ufford Heath, Stamford; 3, Sells & Sons.

Class 199.—For the best exhibit of English beeswax, not less than 14 lbs. in half and quarter-pound pieces.—1, T. B. Blow; 2, Abbott Bros.; hc., W. Woodley.

Class 200.—For the best and most complete set of apparatus required for making comb-foundation from beeswax (as imported or otherwise).—1, J. H. Howard; 2, A. Godman, of St. Albans.

Class 201.—For the best and most ready way of testing the purity of beeswax.—Prize withheld till further trial.

Class 202.—For the most interesting and attractive exhibit of any kind connected with bee culture not mentioned in the foregoing classes.—1, Abbott Bros., for flowers; 2, A. Watkins, Imperial Mills, Hereford, lantern slides for illustrating lectures on bee-keeping; hc., Abbott Bros., section cases; hc. W. N. Griffin, 251 Oxford Road, Reading, honey dubbing.

DEVON COUNTY AGRICULTURAL ASSOCIATION.

BARNSTAPLE.

Under the auspices of the Devon and Exeter Bee-keepers' Association there was an interesting honey, hive, and bee show. A number of prizes were offered by the Association. The judges were J. Thacker, Esq., Ottery; the Rev. J. Bartlett, Topsham; and W. Griffin, Esq., Reading. Owing to the unfavourable state of the weather, a series of practical apiarian manipulations with living bees had to be abandoned. The manipulations were conducted by Mr. Baldwin, the London expert. Visitors, fully protected by a screen, were able to witness the various operations in perfect safety. The exhibition included specimens of the latest improvements in apiarian appliances. The following is a complete list of awards:—

Class 1.—For the largest and best harvest of comb-honey of 1888 from one stock; 7*s.* 6*d.*, R. B. Sanders. Class 2.—For the best exhibition of comb-honey of 1888 in sections: First prize, J. Thacker, 10*s.* Class 3.—For the best dozen jars of run or extracted honey of 1888, the jars not to exceed two pounds each: No entry. Class 4.—For the best exhibition of comb-honey of 1888 in sections: Second prize, R. B. Sanders, 5*s.* Class 5.—For the best exhibit of honey in sections, of the harvest of 1887: First prize, J. Thacker, 7*s.* 6*d.* Class 6.—For the best sample of bees-wax in cakes of not less than one pound each, produced by exhibitor's own bees: Arthur Smyth, 2*s.* 6*d.*

Open Competition.—Class 9.—For the best observatory hive: First prize, Abbott Bros., 1*l.* and first-class certificate; second, S. J. Baldwin, 15*s.* and second-class certificate. Class 10.—For the most perfect bar-frame hive stand: First prize, (illegible) 1*l.* and first-class certificate; second, Messrs. Abbott, 10*s.* and second-class certificate; third, S. Baldwin, 5*s.* Class 11.—For the best and most complete wood and straw hive on the moveable comb principle: First prize, J. Trebble, 5*s.* and first-class certificate; commended, Mr. Seldon. Class 12.—For the best straw hive for depriving purposes, cost to be taken into consideration; First prize, S. J. Baldwin, 5*s.* and first-class certificate: second, Abbott Bros., certificate. Class 13.—For the best sample of comb-foundation: First prize, Abbott Bros., 2*s.* 6*d.* and first-class certificate; second certificate, S. J. Baldwin. Class 14.—For the best and largest collection of hives: Equal firsts, Messrs. Abbott and S. J. Baldwin. Class 15.—For the best honey-extractor: W. P. Meadows, prize 5*s.* and first-class certificate. Class 16.—For the cheapest and best super on the sectional principle: Prize 2*s.* 6*d.*, J. Thacker, and certificate; highly commended, Messrs. Abbott. Class 17.—For the best bee-feeder, the invention of the exhibitor: 2*s.* 6*d.*, Messrs. Abbott.

SUTHERLAND BEE-KEEPERS' ASSOCIATION.

A meeting of those favourable to the formation of a Bee-keepers' Association for Sutherland, was held at 'The Mound' on the 25th June, when the Sutherland Apiarian Society was formed. The Rev. Mr. Grant Dornoch was elected President, and Mr. Symon, 'The Mound,' Secretary and Treasurer. A district Secretary was also appointed for each parish represented. Mr. Grant is an enthusiastic bee-keeper, and a very energetic man. He spares neither time nor trouble in furthering the interests of the Society, and by advice and assistance has induced many to abandon the brimstone pit. The Society considers itself fortunate in having such a president. Several gentlemen having shown their interest in the Society were elected patrons.—ALEX. SYMON, Secretary.

USEFUL HINTS.

This season bids fair to be one of the worst, if not the worst, we ever remember. The *Trifolium incarnatum* and the *Sainfoin* are cut, bees having had very little opportunity of collecting honey from them. The meadows are mowed for the most part, and the white clover is in full bloom, but the dreadful cold and wet weather have hitherto prevented the bees from gathering any quantity of honey from it. When at Nottingham last week at 'The Royal Show' we met bee-keepers from several counties, and all told the same tale, '*No honey*,' '*Bees starving*,' '*Obliged to feed*,' '*There will be no honey*.' Seldom have we had such a spell of cold weather, and it becomes a question what is best to be done.

Examine all colonies and feed in small or large quantities, according to their requirements; this seems the first thing to do, if the weather continues to prevent their gathering natural stores.

SWARMS.—This year swarms have been numerous, but have had little opportunity of getting sufficient food to support themselves, build the comb, and feed the brood. We have repeatedly advised the feeding of swarms for some days after they are hived, and we feel sure those who have neglected it this year will much regret not having followed our advice.

In fine warm weather swarms may do very well without feeding, but in a season like the present they will not have had an opportunity of getting out for days together, and they have no stores to fall back on, like those left in the old hives in all probability have. The food they take with them when they leave the parent hive was all consumed in comb-building in a short time; and if unable, on account of cold wet weather to get out, they become half starved, weak, and thoroughly demoralized, and the queen ceases to lay, and they are a long time before they recover their strength and energy. During a continuance of cold and wet weather after swarming, the bees will consume a large quantity of syrup in the elaboration of wax for comb-building, &c. If we supply them with this judiciously, the combs will be built out, the queen will fill the cells with eggs as fast as they are built out; and when we have a few fine days, the bees will be in a vigorous condition to take all the advantage they can however short the change for the better may be.

Swarms should be confined to as many frames only as they can well cover, closing up with dummies or division-boards, so that they may be kept as warm as possible. We would urge all bee-keepers to feed swarms at once, taking off any supers put on at the time of swarming from the old hive, and keep them off until the weather is improved and honey is coming in freely.

Old Colonies, on which we had tiered up cases of sections, we found had partly deserted them. We have taken the hint and reduced the number of tiers, which we shall put on again as soon as the weather improves and honey is being collected.

Casting out Nymphs and Drones.—This is a sign that the colonies are on the verge of starvation, and feeding must at once be resorted to. The strength of the colonies is thus kept up, and we shall be well repaid for our small outlay when the honey flow comes.

Sections.—Those living in favoured localities having well-filled sections should take advantage of their opportunity and not allow the dealers to make too large a profit. They will in a time of scarceness naturally keep up the price, and it is only fair that the producer should have his share to help to make up for the small quantity he obtains.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to "The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C." All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

THE BEE DEPARTMENT AT THE ROYAL.

[1714.] During the past week the only great show held under the management of the B. B. K. A. during the present year has become an accomplished fact at Nottingham in connexion with the Royal Agricultural Society of England's Annual Exhibition.

The exhibits of honey showed unmistakably the effect of the weather we have been getting in the islands during the past six weeks. The shelves set apart for the large quantities of honey entered for exhibition looked very bare and meagre. The few lots that were exhibited were remarkably good samples in quality, the only fault is, we should have liked to have seen more of it.

There was a good though small collection of appliances, all the leading makers being represented. The exhibition of foundation-making created great interest, and the interest always shown in the manipulation of live bees was as keen as ever. The observatory hives, stocked with bees, were centres of groups of visitors all anxious to get a glimpse of the queen, for which they were chiefly indebted to the courtesy of the several appliance-manufacturers at the show, who mainly divided the time they could spare between attending to their friends and customers and these throngs of curious, eager inquirers.

Mr. Howard, of Holme, Peterborough, was the expert in charge of the bee-tent, who is in himself a fair representative of the happy, genial class of people of which the great army of bee-men is composed. He always managed to keep his audience in good humour as he in stentorian voice discoursed of the profits, *pains*, and pleasures of bee-keeping.

Were I a lady bee-keeper, I would make a new flag and give it to the B. B. K. A.—ours looked decidedly shabby. The bee-tent, large enough for ordinary local shows, is altogether inadequate for the throngs that visit it on such occasions; moreover the one used last week at Nottingham sadly requires a new netting. The internal arena is sufficiently large for the purpose, but the outer canvas circle requires to be larger and not so low down on people's heads. A crush-barrier is actually imperative on such days as last Thursday with its crowds of visitors. While I am making these criticisms I may as well add that, in my opinion, our Committee would do well to make a few alterations; more opportunities should be given to the appliance-manufacturers to make a greater display than they now do. I do not mean by adding to the number of articles exhibited, but by having facilities to show what they do bring to greater advantage. In the classes for inventions, I have long contended that exhibitors should be allowed to explain their inventions to the judges; I repeat the contention, and am certain the Association will profit if the Committee adopt the method advocated. The Royal Show would not be possible but for exhibitors, and only by the efforts and rivalry of manufacturers is it what it was made at Nottingham. The B. B. K. A. may well take the hint, as it might have done another hint from the show at the 'Colonial' in 1886, and the Canadian Exhibition the same year—quantities of honey might have been sold in small tins and bottles, and a taste for honey created, which would have resulted in a future extended demand.

I fear the request for flowers for decoration was but feebly responded to, as those I saw were poor faded things. I reproached myself when I saw them for not taking a good parcel from my own garden.

I confess I left the Exhibition where all the other departments were looking so bright spick and span with a feeling that the bee department did not redound greatly to the credit of our Association, and it is with the hope of inducing the Committee to endeavour to do better next year at Windsor, that the risk of objection by penning those criticisms has been run by—Amateur Expert.

A VOICE FROM THE WEST.

[1715.] On Saturday last I received a most courteous letter fron Mr. F. C. Andreu of Minorca, asking me to accept one of his native queen-bees. I turned to the accompanying packet, and taking it up missed the customary hum indicating the presence of live bees. I removed the paper covering cautiously, and found that the box had already been opened during transit, and, judging from appearances, I concluded that on the bees endeavouring to escape, the lid had been hastily replaced and the queen with two or three workers forced into the food, where they were found firmly embedded and dead. The lid, which had been nailed, was found loose, and only held in position by the paper and string. I will say nothing as to the vexation I felt, not so much for my own disappointment though great, as for that of the

kind and courteous donor who had taken so much trouble unavailingly. I had hoped to have made a report of the merits or the demerits of this singular race of bees indigenous to the Balearic Isles, a race of which possibly more may yet be heard; and if from the writer, it will not be from one who is prejudiced against the British bee, which in his opinion, if less prolific and more soberly marked, possesses certain sterling qualities which will always enable it to hold its own. If her Balearic Majesty should ever arrive and take up her abode in this quiet western village, she may depend upon a hearty welcome with a fair field and no favour, and a true report of the qualities of her progeny shall duly appear in your columns. I have not made any complaint to the postal authorities, judging it would be useless under present regulations, and possibly the outrage was committed outside our own jurisdiction.

I have been somewhat disappointed that the columns of the *Journal* have given so little evidence of the great disaster that has fallen upon us this year. Everywhere the inclement weather, the low temperature, and the cold rains, have brought dismay to the hearts of bee-keepers and emptiness to their hives. This morning I received an order for a hundred pounds of honey which I am quite unable to execute. Methinks many a young and some old bee-keepers will find their experience considerably enlarged before the season of 1888 closes. May I be permitted to ask your readers whether they find wooden feeders safe to use in the apiary? My own experience is that when the wood becomes saturated with syrup, fermentation soon sets in and the feeder becomes useless.—JOHN PEEL.

INTRODUCTION OF A MINORCAN QUEEN.

[1716.] According to promise made on receipt of the queen, I with much pleasure record the means adopted to secure her safe accession to 'a vacant throne.' I confess to having been considerably startled about mid-day on Friday last on being visited by Mr. Henderson, so well known through his connexion with the *B. B. J.*, who produced from his pocket a small parcel, about the size of one's two fingers, with the announcement that it contained a Minorcan queen, and that he hoped *this time* she was *alive*. Mr. Henderson on a former occasion paid me a similar visit, when we were both much disappointed on finding the queen in a moribund condition, but this time we were delighted to find her in splendid health and vigour, and so frisky that I was afraid to give her the slightest opportunity of escape; and it was well I took precautions, or she would inevitably have been lost, and losing her was not to be thought of under the circumstances.

Mr. Henderson will doubtless give her early history, and explain the circumstances in which great care was deemed desirable; I am more concerned with the means which secured her safety. Firstly, then I made an artificial swarm from a very strong stock of hybrids, which latter, now minus its flying element, viz., the old warrior bees, was at once removed to a new stand, the swarm being placed in its stead. The stock was then searched for queen-cells, but none being found I felt satisfied, and proceeded to cage the queen. She was in a travelling-case, consisting of a piece of wood with three holes bored in it, all communicating on the underside, and one of which held some sugar-cake. The holes were each too small to admit a finger and thumb, and she was too lively to make a dash at, so I released her in a bee hat, the veil being held round my wrist, and in an instant she and all her attendants were on the wing, and but for the veil would have escaped. I was thus able to capture her with ease, and in a few moments she was safely within an introducing cage between two of the central combs of the deprived stock.

After twenty-four hours' imprisonment she was found as lively and sprightly as ever, and was replaced until the lapse of another similar period when, being still in full vigour, I laid the cage containing her on the quilt and watched the bees' conduct towards her; and there being no demonstration of anger I pulled out the imprisoning wire and gave the bees access to her and herself the opportunity of escaping into the hive. For some minutes the bees that had gone into the cage remained with her, and had evidently been paying her attention, for when I tapped the cage with the wire I had withdrawn, they all marched out of the cage and escorted her into the hive; where two hours after I found her as happy apparently as if she had been born there; and I trust that in a few weeks she will give me the opportunity of describing her infant progeny.

Of the queen herself I can only say, with my very limited acquaintanceship, that she is as black as anyone could wish, and her attendants were the blackest I ever saw—like polished ebony, but that may have been caused by their rushing about through the passage in their travelling case and rubbing against each other. Mr. Henderson can give evidence of the ferocity of the 'old guard' of the hive when the swarm was being made, and I am sure he would have been astonished had he been present at [the later manipulations at the perfect gentleness of the young bees, who permitted themselves to be twice overhauled without showing the slightest disposition to sting. I felt so sure of this that on neither occasion did I use any protection or any smoke or other 'frightener.' So much for young bees when valuable or scarce queens require introduction.—C. N. ABBOTT, *Fairlawn, Southall, July 16th.*

JOTTINGS BY 'WOODLEIGH.'

[1717.] *Packing Sections.*—As an old hand in the honey-packing business, and also (without egotism) a successful one, I beg to give 'A Lincolnshire Novice,' and others interested in the subject, my system of packing. In the first place, I always endeavour to find the grocer who will supply me with 'empties' at the cheapest rate—'A. L. N.' will find that grocers have various charges for the same kind of empty box, one will charge 2*d.*, while another will want 4*d.* for the same size. Now supposing you have an order for half gross of 1-lb. glazed sections, ask your grocer for a cwt. cube sugar box (cost 6*d.*), make some holes at each end with gimlet or stock-and-bit, and put some strong cord handles for the porters to lift or move it about with, then tie up your six dozen sections in six parcels of one dozen each, tied tightly with strong string; now spread some clean, soft (barley or oat) straw, or better still some meadow hay, all over the bottom of your case about one inch thick, then place side by side, with a little packing between, two of your parcels of honey, pack well all round some more packing, making the parcels as tight as possible, then spread another layer of hay and two more parcels, and proceed as before, then on top place your last two dozen sections, and over all pack more hay, and then *screw* on the lid of case, cord same, and label, '*Comb-honey, with care, This side up—Please lift by handles.*' Smaller orders, of course, will only require smaller and cheaper boxes, but I pack all my orders in the same manner and very rarely have any complaint of damage, not even a glass cracked. I have sent parcels of honey to all parts of England, also to India, packed as directed above, and they have arrived in as good a condition as when they left my hands. Sections per Parcel Post get broken, often smashed.

Hives on the Level.—Allow me to endorse Mr. F. Boyes' note on setting up swarms. I always have my hives *level*, no forward tilt, but then my hives are on the Combination principle, with frames parallel to entrance; and I think Mr. 'U. H.'s' are all, or nearly all, with frames at right angles with entrance, consequently a tilt forward

so that the wet may run off the roofs on the alighting-boards in a veritable shower-bath, makes but little difference except to the poor sentries on duty at the entrance of the hive, who cannot have a very comfortable position with the drip and splash of the miniature cascade from the regions and roof above.

The Season.—The season has been a most disastrous one from a bee-keeper's point of view; the farmer with his damaged hay has some set-off in his fields of roots and promising spring corn, the poor bee-keeper has lost his harvest, and has no redeeming feature to compensate him for all the care, anxiety, and expense he has had with his bees in the past trying spring, and no outlook except further expense for food in building up for the next season. Stocks in many instances are hardly getting a living, with St. Swithin on us and barometer falling we have every appearance of a thorough christening of the apples to-morrow, and if the old folk lore holds good of rain more or less for forty days if it rain on St. Swithin, our outlook is gloomy indeed. Writers in the *Dailies* have tried to show that '88 is in the cycle of nine years, asserting that '61, '70, '79, and now '88, have been wet, cold seasons. I have no record myself, perhaps others of your readers have, who may be able to verify the ideas set forth.

Queen Cells.—In reply to the query the young queen is often left in the cell or cells, as in some instances I have found queen-cells on eight out of ten frames and cut out all except one in a warm part of the hive, say centre of brood-nest, I should not think of leaving a queen-cell at the bottom of frame if I intended the swarm to remain out, as possibly she may get chilled: a good place for a cell to hatch out is one of the winter passages in the top part of the combs.

Inverted Skeps.—Skeps are inverted and then supered with a queen-excluder between the combs and super-case, and the bees go in at the usual entrance at the top of hive instead of bottom, when it is turned up. A small alighting-board may be extemporised by driving two pieces of strong wire into a piece of wood and thrusting the wire ends into the skep, the edge of wood intended to fit the side of skep should be hollowed out.—Woodleigh.

VARIOUS MATTERS.

[1718.] I cannot help thinking that 'Sherborne' gives vent to a sardonic chuckle now and again during this detestable weather. 'Now for your hundredweight reports!' I imagine him to be gleefully ejaculating. 'Guess we shall be somewhat on a level this season. Such level expressed in pounds being—nil.' This Thoma-ian unbelief will not allow him, I fear, to credit any statement recording a big surplus during the year 1888. This season, following the bad one of last year, will, it is to be feared (or hoped?), induce many a bee-keeper to quit his business. I feel equal to another season or two of a like character (like in their results), but if, after that, another similar season should follow, then I should feel it my duty to bid adieu to my bees and their belongings—that is, if I should not in the meantime develop into a dealer in bees and appliances, in which case I would do my utmost, short of actual prevarication, to induce people to enter upon the highly remunerative and sure business of bee-keeping.

Natives v. *Foreigners.*—The high character which many eminent bee-keepers, among them our Editor, the writer of 'Useful Hints,' and 'Amateur Expert' (I refrain from naming those who deal in foreign bees, not because I doubt their veracity when they praise the bees they have to sell, but because the fact that they have them to sell may unconsciously affect their judgment), give to the foreign bee as compared with the native, that I often feel that, as one who aspires to be an advanced bee-keeper, I should, without delay, introduce foreign blood into my apiary. No sooner, however, is this resolution formed, than Mr. F. Boyes, or some one else, shatters it. I fancy that Mr. Boyes a few weeks ago challenged discussion on the relative merits of the native and foreign bees. Will he favour the writer (and with him, no doubt, many others) by giving reasons for his preference for the blacks or browns? I trust that he can give satisfactory reasons, else I shall be under the necessity of introducing alien blood, and, as a consequence, hybridising the bees of the neighbourhood, which latter may cause unpleasantness. Already one of my lady neighbours feels rather sore towards me because my bees have been taking liberties with her flowers, thereby altering their colours.

Another matter that requires more discussion is that of superseding queens. My experience is limited, but, as far as it goes, it is in favour of the let-alone policy—that is, while the queen's conduct is satisfactory.—Welsh Novice, *July 4th.*

Since writing the foregoing, I have seen 'Sherborne's 'Echo' in the *Journal* of the 5th inst., and beg to express my sympathy with him in his futile attempts at reaching the 100-lbs. record. I cannot help thinking, 'Sherborne,' that your very moderate results in the past are due to the same causes as occasioned your loss of one sixth of your stocks during the winter. What those may be I cannot tell, but perhaps I should not be far wrong in lumping them together and calling them mismanagement. Anyway, it appears to me that a bee-keeper of 'Sherborne's' experience ought to be able to record better results.—W. N., *July 7th.*

PACKING AND SENDING SECTIONS BY RAIL. (1703.)

[1719.] I have frequently packed and sent 1-lb. sections 200 or 300 miles by rail without their getting damaged as follows: I get small hampers, like sportsmen's hampers, made at workshops for the blind, Carlisle, size 16 in. long by 9 in. wide by 9 in. deep, no handle, price one shilling. This holds six or seven sections. My sections are folded in paper, with a piece of cardboard or thin wood at each end of the row. Put hay three or four inches deep in bottom of hamper, place sections, more hay on the top and all round, tie down lid, and cord hamper. Having no handle, the hamper must be lifted by the cord in the middle, which keeps the honey level. Label, '*Honey. This side up. Care.*' Sections should be well built to the wood to travel well. Hampers of honey could not be sent safely by Parcel Post, as they might be turned every end up, but empties could be returned so. A hamper 14 in. square and 9 in. deep holds a double row of sections, and costs 1*s.* 3*d.* I give inside measure, but the hampers are not made exactly to half an inch. They ought to be as wide at bottom as at top.—Beeswing.

FOUL BROOD.

[1720.] I see you invite a correspondent to state his experience of a cure of this disease, so send you particulars of my case—*pour encourager les autres.* In your issue of July 28th, 1887, you inserted a letter from me upon this subject. The disease seemed cured in this hive last autumn, but it broke out again this spring. I first noticed it on May 12th in a mild form, although I had frequently sprayed the combs, &c., with salicylic acid and had placed a lump of camphor near the entrance. I called in the same 'doctor,' who could not advise the destruction of the colony, as so much of the brood looked healthy and the queen so handsome. He removed two frames, opened the diseased cells in the others, dropped phenol into them from a '*Fer Bravais*' bottle (which, I may explain, is sold with a tonic which has this name); this answers the purpose capitally, as

the drops can be regulated. Phenolised syrup was poured into one side of the combs—avoiding, of course, those cells already occupied by eggs and larvæ—and placed them and the bees into a fresh hive.

In a week's time the combs were crowded with bees, so I added another frame with syrup as before, repeating this process at intervals as the bees became crowded. I sprayed the combs each time with salicylic acid, which was, I think, a mistake, as it had not cured the disease the previous year, and I ought to have given Cheshire's phenol a fair trial; another lump of camphor was added, this also had not proved effectual last year.

By June 4th all traces of foul brood had ceased, and on 21st I gave the bees the tenth frame without syrup, and am only waiting for a fine day to try them with a super, as they are so very strong. I may explain that the frames were reduced to four upon the 'doctor's' first inspection on May 15th.

I hope this account may catch the eye of 'Sussex Rector' (see p. 456, October 13th, 1887), as he asks if others have tried his remedies, and I have done so to some extent.

Can any one report upon *paper quilts?* I placed one of brown paper next above the first carpet, and at once a great increase of warmth was apparent; the glass of the window became very warm. I imagine the paper quilt would be useful when packing up for the winter. I hope no one will blame me for not destroying this diseased stock: it is, alas! my only one, and if that goes, I cease to subscribe myself—A Bee-keeper of West Kent.

SKEPS REVERSED.

[1721.] In reply to Mr. Burkitt (1697), my experience last year was very successful, obtaining over 60 lbs. per colony on this principle. I got some hives containing nine frames, with a hole in the bottom about seven inches diameter, and worked for extracted honey. I have now some cheese-boxes which I am trying as an experiment. I inserted foundation on strips of wood, which fasten on the cheese-box bottom same as the triumph super that was advertised by a London firm two years ago. I got one and received a prize last year at York with it; it weighed 26 lbs., and was filled in eighteen days. I have not tried it with sections, but will do, so as I am in a very good honey district: there is time yet to try the experiment. We are now enjoying a spell of brilliant sunshine, and the bees are making the best of it.

I was surprised to read such a poor average in Mr. Mitchell's report, page 314, for the last year, and complaining of a bad year. It certainly was short, owing to the excessive drought, but it was a good season with me. My best hive produced 64 lbs. comb-honey in sections and 30 lbs. extracted, and in September contained fully 20 lbs. of sealed stores. I also had a straw skep which took first prize at York; it weighed 48 lbs. and was collected in thirty days. I had twelve hives at spring, which produced over 700 lbs. of honey and increased six stocks. My eighteen colonies survived through spring with a little nursing. I have had sufficient honey the last month to supply customers and my own household. In my opinion such a honey-flow as we had last year does not happen once in six years; consequently, those that had not a good surplus must not blame the poor bees.—Paul Bielly, *North Grimston, York, July 4th.*

AN AFTERNOON WITH THE OLD BEE-KEEPERS.

[1722]. Perhaps it may be interesting to some of our readers to hear how an expert may be of some assistance to the country bee-keepers.

I was sitting in my apiary reading the *B.B.J.*, and occasionally glancing at my bees, when a thought came into my head that I should like to have half-a-day in the country amongst the old, original bee-keepers. So taking up my bicycle, carbolic sheet, smoker, and a few other appliances, I started off. After perhaps an hour's ride I came across a house where I saw four skeps in a garden, so I introduced myself; the lady saying, 'You are just the person I want to see,' taking me into her apiary. I had not been there two minutes when out came a swarm, which of course I had to hive. Now it happened while the bees were on the wing, an old lady appeared on the spot, who asked me what I knew about bees. She said she had kept bees for over fifty years, and had forgotten more than I could ever know. Strange to say, this was all because I was using a little water to represent rain. She said that I had ruined the bees, and that they would all go back to the old hive. When I had shown her they would not, still she would have it that I had ruined them, and that they would not work any more, saying they would all die. After I had convinced her of her error, I had a little conversation with the owner, and I learned that she had got a bar-frame hive which she had bought at a sale for 6s. I then transferred two of the old skeps into it for her; so you see what was taught in that case alone.

When I had finished I went for another mile perhaps, looking into all the gardens as I went along, at length coming to a farm, where I saw five hives standing against the wall on some benches. While I was looking at them, the owner came up to me, I asked him how he got the honey from his bees, when he said, 'Oh, that's easy enough, I kill them!' Asking how he did this, he replied, 'I dig a hole in the ground, put some brimstone in a saucer, set fire to it, put the hive on top over the lot, cover some earth until they are all dead.' After explaining how the honey might be taken away from the bees without destroying them, 'Well,' said he, 'if you like to do that, you can have the bees, providing you give me back the hive and honey,' which I consented to do.

I went on to another apiary, where there were eight stocks. After explaining to the owners as I did at the last place, they told me I could have four if I liked to take the trouble, leaving the hive and honey. The next place was the same old tale, killing the bees to obtain their honey. So you see it was encouragement for me to go on, as I was doing good business, at the same time giving every information I could to those who required it.

The next place I called at the lady told me she had bought a bar-frame hive four years ago, but no one had called to give her information as to transferring them. I transferred one old skep into it, then explained how the honey was to be taken away from the skeps without killing the bees. 'Well,' said she, 'I always pay a man threepence per hive for killing my bees.' So I promised to take the honey from them so long as I could have the bees, I promising to give the man threepence per hive, so that he should not lose his job.

As I was travelling along the road I noticed some bees coming from a roof. Jumping off my 'bike,' I inquired what they were doing there. To my surprise, I was told that they had swarmed there fifteen years ago; they were between the sitting-room and the bedroom floor. The owner of the house said they had not interfered with him, so he should not interfere with them. He had not touched them since they came. They had not swarmed to his knowledge, neither had he had any honey from them. He said he was glad I had called, because they might become a nuisance to him; if so, he should send for me. So I left my card with him. He gave me several addresses of bee-keepers, who all promised to let me have their bees at the end of the honey harvest. Strange to say, I never met with one of the bar-frame hives except those I have mentioned above. So you see what may be gained and taught in an afternoon amongst the old, original bee-keepers.

If you will permit me space in your valuable columns,

I will conclude with relating how I transferred the old skep into the bar-frame hive.

First I drum or drive all the bees out of the old skep. To do this I obtain an empty skep, place this empty skep on the top of the tenanted one, holding them together with driving-irons, of course, the tenanted one being turned upside down on its crown in a pail half full of water, so as to keep it steady, then drum all the bees out of the old skep up into the empty one. When I have got all the bees into the hive above, I cut out all the combs and tie them into the bar-frames with tape. When all the frames are ready, I shoot the bees out of the skep on to the alighting-board or into the top. After they have settled down, close up with dummy board. In about three or four days, not later, the tapes may be cut away with safety. Two or more stocks may be done in like manner, taking care that you secure all the queens but one, not forgetting to spray all the bees with a little essence of peppermint.—A Queen Bee, *Birmingham.*

Bees in a Riddle (1712, page 335).—The bees you refer to are after water. The soil you mention no doubt is moist with water or rain. Sprinkle a little carbolic solution over the soil. If this be injurious to it or its contents, use a piece of rag saturated with the above, cover over it. Then fill saucer with water—put some small stones in, so as the bees cannot drown—close to the hive, say, a yard or two. Mix a little honey in it; it will entice them. You need not use honey after the first time, because when they have been once they know the spot again. Always keep water in your apiary.—A Queen Bee.

[1706.] Destroying Wasps' Nests.—If the squib has a piece of fuse (such as is used for firing blasting charges) tied at the open end and carried back; the hole can be blocked up with earth, leaving end of fuse out, nothing more will be seen of that nest and no digging out required: I always damp the powder in the squib, it makes more smoke.—P.

Echoes from the Hives.

Harborne, near Birmingham, July 15th.—Feed your bees! yes, feed them, although the almanack says it is July. Mistakes will happen, and perhaps after all it is November! The weather is truly frightful. Never since I have kept bees (I did not notice the weather much before) have I known a season worse or any way as bad. To-day it has never ceased raining, and being St. Swithin's Day, I suppose we have to go through forty days of it! For a fortnight or more my bees have been fed nightly at the entrances. After a few nights they are waiting for you, and how pleased and eager they seem! Just a little diluted honey and syrup in a tin at the entrance will keep hives thriving; but for it mine would now be dead. Stocks are absolutely honeyless. News reaches me that stocks, and especially swarms, are dying where the owners are not feeding them. Is it not maddening to see strong hives that would work grandly if it were to come fine dying of starvation just for the want of a little syrup,—costing so little, too? What a pitiable sight it is to see thousands dead and dying, each one, if it had lived, ready and willing to do a hard day's work, collecting a few spots of honey for the general store! As a rule I find hives are very strong, able to fly so seldom. The death-rate must have been trifling, and, of course, young bees have hatched out the same as usual, so that the populations are immense. If it were to come fine, 'how the little beggars would work!' What honey they would store! I have hives with two sectional-boxes on, packed with bees, and all they do is to come out a few at a time, fly round, wistfully look at the sky, and then pop in again, saying to themselves, 'There's no place like comb.' Shall we get any honey? Yes, if we have plenty of sunshine. There are hundreds of lime-trees round here, and with fine weather no one knows better what the bees can do than—H. J. Sands.

New Sowerby, Grantham, July 16th.—I see in the *Journal* that reports are anything but cheerful. The only income with us was late in June. The bees gathered in good earnest from a large field of sainfoin, making us believe the third storey might be required on our double hives, but this glorious state of things only lasted about a week, when cold north-east winds and rain put a stop to our willing workers. Since then they have been living and rearing brood in large batches, which means empty cupboards, and as the rain still continues and very little sun—well, we must not spare the best sugar by-and-bye, I suppose.—N. P.

NOTICES TO CORRESPONDENTS & INQUIRERS.

E. H. Hogge, *Cape Colony.—South African Bees.*—After fifteen years' experience with these, Dr. Stroud says he regards them as a race, the outcome mainly of the old Egyptian bee (*A. luteofasciata*), crossed by some greyer variety, probably the Cyprian, and finally by the black bee. The special features and characteristics of all these the 'Africans' in a more or less degree retain. Their excellence he considers of a much higher order; they are prolific, are very tractable, and under ordinary treatment very manageable, rarely requiring smoker, and their working capabilities when honey is to be had are remarkable, gathering early and late in all seasons. Their introduction into this country, however, has not met with success, so that we cannot yet speak decidedly as to their adaptability to our climate. Being a healthy race, it would be of great interest to have them imported and fairly tried against other foreign races cultivated by us. We should be glad to hear of the doings of bee-keepers in South Africa, and to hear from you. We thank you for the letters sent, and will insert them as soon as we can find room for them.

A Novice.—*Transferring Bees.*—Drive your bees first week in August.

T. O. S.—*Artificial Swarming.*—Your plan will do very well. Do not leave it later than 1st of August.

Northumbria.—*Piping Queen.*—This is not unusual before throwing off first swarm.

Amateur.—*Ligurian Bees.*—These should do well with you; so would Carniolans.

E. H. O.—1. *Dead Queen.*—Doubtless the old queen has been superseded. 2. *Fertile Worker.*—There is no record of a fertile worker laying worker eggs, and, to be candid, we do not credit it having occurred in this instance. As at present understood by investigators, it is impossible.

C. Cheal.—*Swarm Returning.*—We should have preferred to feed with syrup. We should say the weather was the cause. 2. See reply to 'T. O. S.'

J. S.—*Lincolnshire.*—Lincolnshire is acknowledged to be one of the best honey-producing counties in England. The districts in which white clover is grown as one of the rotation crops are preferable.

Wood Green.—*Beautiful Coloured Bees.*—If colour is your object, we should recommend Cyprians for their colour and their beauty, but they have the credit of being vicious when irritated. Ligurians will probably be most suitable for your purpose. Cowan's *Guide-book* describes the various races of bees.

L. W. R.—1. *Exposing Brood.*—This depends on the weather entirely. If the wind is at all searching, the frames should not be lifted from the hive, even although the sun's temperature may be high; neither should strong sunshine be allowed to fall on the brood. Five minutes' exposure with adhering bees would not hurt on a *genial* day, provided the frames are not

carried through the air uncovered. We have not tested how long brood without bees can be exposed without fatal results, because the surrounding circumstances must, of necessity, vary so much. Quickly, but tenderly, should be our motto when manipulating brood-frames. 2. *Queen.*—We think your queen is there, because you state that odd corners are being filled with worker-comb. 3. *Fertile Worker.*—No; the larvæ sketched are, apparently, about five or six days from date laid. 4. *Ejecting Drones and Larvæ.*—We should not be distressed on this point. Some are sure to be thrown out after transferring has taken place. 5. *Rate of Feeding.*—Two holes should do. Food to be given in the evening only, say, one-third of a pint. Cease as soon as honey is coming in freely, which it should be shortly from the limes. 6. *Carbolised Cloths.*—Your plan of using these is excellent. The bees were not stupefied, only anxious to give the smell a wide berth. 7. *Examining Hives.*—Examinations made in the evening are less likely to lead to robbing, but yours should not want any manipulation more than once a-week at the oftenest now. 8. *Leaving Hives.*—If you find the bees have a fair quantity of food they will be all right till your return. State their condition a week or so before you go. 9. Please forward another sample of your bees.

J. S. Amateur.—1. *Enamelled Quilts.*—These may be retained in the winter. 2. *Taking Bees to Heather.*—Yes, take them. 3. *Skep, Bees hanging out.*—Either super or put an eke under.

G. J. Y.—1. *Broodless Swarm.*—These appear to be broodless. Introduce a queen. 2. *Dead Workers.*—This looks like robbing.

O. D.—1. *Artificial Swarm.*—It is not too late to make an artificial swarm. It can be done during this and next month. 2. *Number of Swarms.*—You could make two good swarms from each of your hives, having so many frames covered with bees. Put excluder-zinc on frames to keep queen down. 3. *Rearing or Providing Queens.*—The bees will rear their own queens if you give them, at least, one frame containing eggs to each swarm; but you will save three weeks by getting queens, besides having the benefit of fresh blood. We should, therefore, recommend you to get queens.

N. Preston.—1. *Sugar.*—No. 1 is Porto Rico sugar, No. 2 is what are called 'Demerara Syrups.' Porto Rico is suitable for dry sugar feeding, crystallised sugar for making syrup. 2. *Bees.*—The bees are black or English bees.

Wax.—Certain samples of wax sent to be tested have not up to our going to press been returned.

Correction.—Page 335, in second verse of poetry, third line, *read* 'doubted its power, and felt.'

SHOWS TO COME.

July 25, 26.—Leicestershire B.K.A. Secretary, Edwin Ball, Waltham, Melton Mowbray.

August 1, 2.—Glamorganshire Agricultural Society's Show.

September 5-7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 1st.

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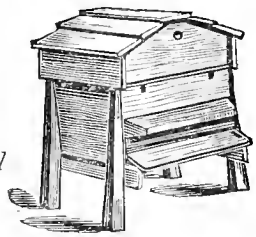

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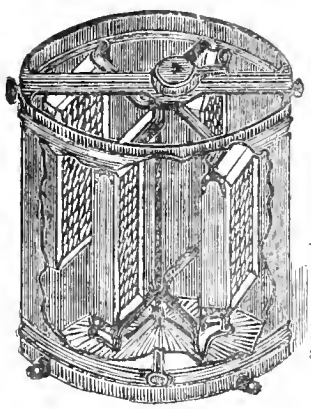

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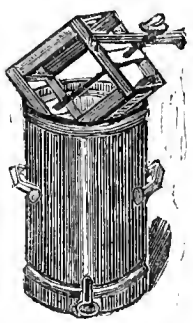

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G—For the best Extracted Honey in glass jars	5 ,,	...	2	12	6
In Class F the Silver Medal, and in Class G the Bronze Medal, of the British Bee-keepers' Association, will be awarded as extra prizes to the best exhibit made in these classes by a member of the L. and C. Association residing within the Counties of Lancashire and Cheshire.					
H—For the best 12 to 20 lbs. of Granulated Honey	3 ,,	...	1	15	0
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THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

PRACTICAL WORK IN THE APIARY.

MAKING ARTIFICIAL SWARMS.

Besides the methods of artificial swarming described on page 319, there are several others which will now occupy our attention. An apiary can be very rapidly increased by the first method, and when a swarm is taken from every hive, the number of colonies can very quickly be doubled. Where the full number of colonies have been reached, and it is only desired to make a few swarms, either to replace those not healthy or make up losses, the better plan is to utilise several hives in order that the swarm can be made without weakening any of them. It is impossible to get a large amount of honey and a large number of swarms the same season; and if a strong swarm is taken from one hive only, the chances are that neither will yield much honey. When to make the swarm is also a point to be considered. Our plan has always been to do so after the main honey-flow, because we shall have secured our harvest from the early fruit trees, and also from the clover and other honey-yielding plants flowering usually in June. In many places there is little gathered between the end of June until the heather comes in, and during this interval is the best time for making the swarms, which, if provided with good queens and plenty of bees, should be fit to lay up for themselves a sufficient provision for winter use. We can make three colonies from two by proceeding in the following way:—On a fine day, when most of the bees are flying, remove five frames containing brood and eggs from a strong colony, and shake or brush the bees back into the hive. Place the five frames into the centre of new hive and place empty comb or comb-foundation on either side to fill the hive. The other hive from which the combs have been taken should be treated in the same way. This hive is now done with, and can be covered over and left. We then remove another strong stock to a new stand and place the new hive containing the combs of brood, but no bees, where it stood.

In this way one hive supplies the combs and another the bees, because all the bees belonging to the hive which we removed to the new stand will return to the old spot and will furnish the new hive with the necessary population. These will at once commence queen-cells, and the hatching bees will provide the nurses for taking care of the brood. Of course, if we wish to save time we will not wait for the queens to leave the cells but will at once introduce a fertile queen. In this way almost any number of colonies can be utilised in making a swarm. For example, if we have four colonies we may take two combs of brood and eggs from each and brush all the bees back into their hives. Fill up the vacancies caused with empty combs. Insert the eight combs into a new hive and place a frame of foundation on either side or close up with division-boards. Then remove a fifth stock to a new stand, and place the hive containing the combs of brood in its place. The returning bees, as in the last case, will furnish the population to protect the brood and raise the queen. It will be seen that in the same way six, seven, or eight hives may be made each to contribute its share towards building up a swarm, and that without any detriment to themselves. On the contrary, it often does them good to take away some of their brood and give the queen more room to lay. In all these methods we make our swarms from bees that have flown and depend upon our young bees to hatch from the brood-combs inserted; but there is another way of making a swarm entirely of young bees. We place the hive we wish to tenant on its stand in the apiary and then select from five to eight strong stocks to provide the combs of brood and bees. Then go to the first hive and take out a frame filled with brood and eggs and examine it well to see that the queen is not removed with it. Then carry it to the new hive and with a jerk shake off all the bees on to the alighting-board in front of the entrance and place the frame of brood inside. Then go to the next hive selected and remove a frame of brood and treat it in the same way, and do the same with every one you take out to form the new swarm.

When as many frames have been inserted as are required the hive is closed, and we can either allow the bees to raise a queen or can introduce a queen amongst the bees as they are running into the hive. All or most of those bees that have flown will return to their own hives, whilst the young bees will enter the new hive and remain to protect the brood. The bees all being young will take very readily to the queen. By this method a comb and a few bees are taken from a number of stocks, so that none of them are appreciably weakened. If it is thought advisable to make swarms during the honey flow we should recommend either of the two last methods as being the least likely to cause a diminution of the surplus collected. Even where a considerable number of swarms are required matters may be so arranged that they could be made once a-week during the whole season. A hive that has only had one comb of brood and bees taken from it will be quite strong enough to yield another in a week or ten days if the queen is a good one, and this could be continued every ten days throughout the season. We must caution our

readers not to neglect feeding swarms, more especially during such inclement weather as we are now having. If the swarms are not fed they are sure to perish. With January weather also in July we must keep them warmly covered and reduce the space by division-boards to the number of frames occupied by the bees.

Fortunately for bee-keepers such a summer as the present one does not come very often, and those who kept bees in 1879 will remember that year as very similar to this one. We shall certainly never forget the mud at the Kilburn Show, and how it rained at almost every exhibition of bees we visited. This summer is not quite as bad, although it is very nearly so. Let us hope that we may have a fine autumn and that our swarms may collect enough stores for their winter provision.

Atte ye greate Showe.

There was nothyng muche, wen alle ys fayde, to make a note of atte ye Nottynghame Showe, after that wone hath viewed ye divers novell devyces wyche apere from tyme to tyme; ye fayme olde barrfrayme hyv, ye fayme olde feder, ye ydentical olde fayces of menne difplaing their wayres as were fene of yore. Wonne varyetie there was, mayde by ye Committee of Brytifh Bekepers, wych atte ye firft fyt was barelie relyfhed by fomme, to wit:—ye difplaycement of ye olde veteran Experte-in-chefe Baldewyn from ye be tent. We were tolde that ye chefe reafon of this furpryfe was that ye mynde of ye B.B.K.A. did lede them ynto chofyng a rite deft manne wych would do hys werke atte les coft of ye peces than erftwyle, by reafone of hys livyng yn ye neborode of ye fhowe. Thys foundethe rite wele, but yt il affortyth wyth fome olde-faflyoned notions of ufyng ye fervante wele wen he fervyth wele, in alle ye hete and burdene of ye daie, yn fayre wether as well as fowle, but do not put ym afyde for eke doeyng nothyng amys. Yt behoveth wonne to fe ye Committee tak a lyke mynd unto wifdome ynto alle theyr doyngs. Agayn, I have onelie prayfe to faye of Maifter Howarde, ye godeman that dyd hys werke yn ye be tent ryte nymblie, and hys talkyng was alle common fenfe. So wele dyd ye byftanderes lyk ye difcours of Maifter Howarde that they preffed themfelves ynto ye fayered yncloſure ytfelf atte grete ryfk of geten yflabed with be-ftyngs. There was atte tymes barelie room eno' for ym to go onne with hys fhowe. I had almofte to pufh rudelie to get withyn hearyng of ye myfteries of handlyng ye bes.

There was a jouſtyng or tryall of fkill of mills for rollynge, and alfo the werke of makyng bes-waxe ynto fhetes yclept foundation, werewyth to fyl ye woden fraymes yn ye hyv; there were who gotte their fyngers burned wyth ye boylyng waxe, and there were who fmyled at yt.

There were fome fearfullie and wonderfullie mayde dyverfions yclept Extractors; fome were not eafily underftanded of ye people, for Darby and Joan would afke yf ye thyng were for churnyng butere, and Joan would foe often turn yt round about, that wonne makere dyd perforce tye hys up agayn and agayn. I could not but remark on ye lykenefs of people to fome animals yn Regent's Parke, for whatever could be moved, lyfted, or turned round, had to be fenfelefflie werked juft as ye laft wonne werked yt.

Maifters Abbotte, Blowe, Godeman (of Saynt Albans) Neibor, Gryffyn (of ye dubbin), Meadowes, ye two Dickfons, were alle to the front with their wayres, and prefent themfelves. Maifters Raynor, Seager, Hookere, ye fon of Clure of ye Lathams, and W. B. Carre (ye devyfer of ye metaille endes) were alle there. ('May my end be lyk hys,' W. B. C., myt be ye motto of ye next inventor, or elfe 'hys end was (1) pece.' Wonne of ye judges was a young man, but I wot he was an olde judge by ye waie he applyed hymfelf to ye be furniture. Ye judges, Mr. Carre, Rev. G. Raynor, and Mr. W. Martyn, were alle there, and yt ys to be hoped we fal here no more murmuryngs of ye paft by refon of the paynes they toke to do what ys fayre among men. I clofelie fcanned their fayces and ufed my fmokere till I was wearie of waytyng, fo how tired ye judges muft have bene! I trow ye judge is alwaies wrong by ye nature of thynges, for he cannot pleafe alle altho' he tries. Hys office ys lyke unto ye drawing watere out of a well with a feve. To ufe an old joke, 'ynfted of honey he getteth but whackes.' So we know ye very beft upright men are ye judges and awarde ye prizes to ye beft godes.

A brave and godelie fhowe of floures likelie for bes to cull ye nectar out of, was mayde by ye firm at Southall and got its mede of prayfe. Of ye glafs hyves there, ye feders and fraymes I will not prayfe wonne over another, and of new fangled notions there were alle too manie.

There were hyves bigge and hyves tal,
Hyves brode and hyves fmal,
Hyves fhalowe and hyves depe,
Ye roofes flatte and ye roofes ftepe,
But hyves to plefe ye alle.

X-Tractor.

ASSOCIATIONS.

BRITISH BEE-KEEPERS' ASSOCIATION.

Committee-meeting held at 105 Jermyn Street, on Thursday, July 19th. Present, the Rev. George Raynor in the chair, Dr. Bartrum, Captain Campbell, the Rev. F. S. Sclater, Rev. F. T. Scott, Rev. E. Clay, H. Jonas, W. O'B. Glennie, treasurer, and the secretary. The minutes of the last meeting were read and confirmed. The secretary presented the award of prizes in the Bee department of the Royal Agricultural Show. Resolved, that the same be paid, and that the statement of accounts relating to this exhibition be forwarded to the Finance Committee as soon as completed. The consideration of the amended rules for conducting third-class examinations was resumed and completed. Several judges and examiners were appointed for country shows. Third-class certificates were signed in favour of Messrs. H. W. Perkins and J. T. Ambrose, having passed successfully at the Aylesbury show; and of Messrs. W. Keene, O. Lambert, W. T. Marlow, and Edwin Stannard of Hampton, having passed at the Middlesex Exhibition held at Hampton Hill.

Quarterly meeting of County Representatives held at 105 Jermyn Street on Thursday last, the Rev. George Raynor in the chair. The following county representatives were present:—W. Lees McClure, Lancashire and Cheshire; C. N. White, Hunts; F. H. Meggy, Essex; W. B. Webster, Berks; F. Cudd, Kent; Rev. W. E. Burkitt, Wilts.

The minutes of the last Quarterly Conference having been read and confirmed, the chairman explained the nature of the amendments which had been made in the rules and regulations for conducting third-class examin-

ations. The amendments having been fully discussed and some additions added thereto, it was resolved, that the same be printed, and come into force on the earliest possible date.

We are requested to state that owing to the illness of the secretary at the time, no report of the Committee meeting held on June 21st appeared in our columns. There were present at this meeting, Captain Bush in the chair, the Rev. Dr. Bartrum, Rev. J. L. Seager, Rev. R. Errington, and the secretary.

The Quarterly Conversazione was held at 6 p.m., in the Board-room of the R.S.P.C.A., 105 Jermyn Street, St. James's. Among the audience present were Mr. Glennie, Mr. H. Jonas, the Rev. Mr. Scott, Mr. Meggy, Captain Campbell, Mr. Webster, Mr. Henderson, Mr. Lee, the Rev. Mr. Burkitt, Mr. Blow, Mr. Hooker, Mr. Groves-Watson, Mr. White, Mr. Grimshaw, Mr. Cudd, and Mr. Alexander.

The Chairman (Mr. Glennie) said that there were several articles bearing on bee-culture for exhibition, and consideration that evening. They were, (1), Section-holders in various forms, designed by Mr. E. McNally, and sent by Mr. P. Stubbs, 2 Britannia Street, Leek; (2), Glass sections by Mr. Skerner, Swanwick, Alfreton; (3), Swarm-catcher by Mr. Webster of Binfield, Berks; (4), Cottager's hive with (*a*) Combination feeder and (*b*) Combination floor-board, by Mr. C. N. White, Somersham, St. Ives, Hunts. The proceedings would open with a paper entitled, 'The Red-backed Shrike, or Butcher-bird, as an Enemy of Bees,' written by Mr. Webster, who had kindly consented to read it.

The Red-backed Shrike, or Butcher-bird.

In England, bee-keepers have but a few living enemies to contend with; in fact, so few are their numbers that they may be counted upon the fingers. By living enemies I mean such creatures that prey upon bees or destroy the produce of same; and when speaking of their numbers, I allude to them, not individually, but collectively, in their different classes. By many, and also by most writers upon apiculture, the Tit family, embracing as it does in England four varieties, namely, the great tit (*Parus major*), the blue tit (*Parus cæruleus*), the cole tit (*Parus ater*), the long-tailed tit (*Parus caudata*), are noted as the chief delinquents; but of this fact I have very grave doubts but what another family group are by far the largest depredators, and commit their ravages at a time of the year when such destructiveness is most hurtful to the calling of the apiarist. I allude to the family of the Shrikes, or, as they are more familiarly termed, Butcher-birds. Again I must congratulate the bee-keepers of England, inasmuch as only one variety of this family visits in any considerable numbers these shores, and also that these visits are almost strictly confined to certain counties, notably those in the centre and western portions of the country. Among the counties chiefly patronised by these posts are Essex, Sussex Downs, Wiltshire, Berkshire, and Gloucestershire. In the nothern and eastern counties this bird is unknown except in very rare instances. The members of the family of shrikes which thus commit their ravages upon the charges of the bee-keepers are called red-backed shrikes or butcher-birds.

During last spring (1887) I called attention in the pages of the *B. B. J.* to various bird enemies which I had observed preying upon bees, and also expressed my opinion that the tit family had been abused by bee-keepers more than was needful; while, in their eagerness to depreciate the good offices which these birds perform in assisting to rid our fields and gardens of many an insect pest, they were overlooking one, which, if located near an apiary, would spoil the efforts of many a bee-keeper in his avocation of queen-rearing, or even honey production. No doubt many here will think that I am conjuring up a bird ogre which in reality scarcely exists, but I can assure them that such is not the case, and, no doubt, after I have related my experiences, such ideas, if present, will be considerably modified.

During the season of 1887 I was at first considerably amused at the visitation to my apiary of a pair of red-backed shrikes, who, no doubt, very comfortably reared their progeny—which, by the way, I may tell you, they are exceedingly attached to, in fact, for months after their paternal and maternal duties are finished, the cock, hen, and family consort together—in a neighbouring hedge, and feasted, unknown to me, on the sweets of my apiary, only, unfortunately for me, there was a bee outside these sweets. After watching these birds on a Sunday afternoon—I was too busy during the week—for some time, I had my eyes opened to the fact that bees formed a considerable portion of their *menu*: but even then I supposed that many were caught just for the fun of the thing, as I saw quite a number of bees impaled upon the barbs of a wire fence encompassing two sides of my apiary. I supposed that the sting was a little too much for their digestion, and they therefore, as is natural with them, stuck them upon these barbs, using same in place of thorns. I did not mind losing a few dozen bees in return for the pleasure I derived in watching the rapid, darting flights or sentinel-like proceedings of the beautiful plumaged cock as he sat, evidently on the *qui vive*, upon the top of one of the fence posts, ever and anon giving his tail an expressive wag peculiar to him. I may here diverge a little and tell you that all the members of the shrike families impale their prey, be it bird, mouse, or insect, upon a thorn, and then tear it to pieces while so impaled; but this proceeding is frequently dispensed with when feeding their young. This pair of shrikes and family departed upon their long journey to South Africa as soon as September put in an appearance; and wishing them a *bon voyage*, I set to work thinking of what, perhaps, they had done.

During last winter I often thought of what I called ill-luck I had experienced in queen-rearing. I reared the queens, formed nuclei; but after the queens disappeared; yet about half-a-dozen nuclei hives that I kept on another portion of my premises did not suffer any more than ordinary losses. The truth dawned upon me. Why did not I guess the meaning of the quick, downward pounce of those butcher-birds just along the front of my nuclei during the height of the queen-rearing season? They are the delinquents, and when next season comes, I'll try first, and, if proven guilty, execution will follow. It has done so.

The first member of this family that came within the influence of my gun was a young one, which directly the cock had fed I procured. Upon opening the œsophagus I found, as is peculiar to most birds of prey, that the food just taken had already passed into the gizzard. Upon opening it, I removed and washed the contents. Numerous small coleoptera and a moth were all I could discover, but as this one was shot in the early morn before bees were flying, I was not surprised at the results. I then waited until the bees began to fly and shot another young one. The gizzard of this one showed a more varied diet—small coleoptera, the head of a humble bee, the wings of what I took to be a daddy-long-legs, and the thorax and abdomen (separate) of a honey bee. The cock bird I next shot during the flight time of bees, in his gizzard were just a few elytra of small coleoptera, but the rest of the contents consisted entirely of bees. There were the yellow stripes of my Italians on most of the abdomens. I washed six stings from among the unrecognisable *débris*, together with seven remnants of abdomens having the sting attached; the number of legs I did not count. The next bird I shot was the hen before the bees were flying;

in her gizzard I found a number of small coleoptera, the remains of a humble bee, and the three disjointed (head, thorax, and abdomen) portions of a large common wasp, the last segment of the abdomen containing the sting being telescoped into the anterior portion, whether by design on the bird's part, or accident, I had no means to determine. At the same shot I killed two young ones: one had nothing recognisable in the gizzard, but the other had the remains of a honey bee (Italian), no doubt, an early riser. I noticed after that one of my colonies was flying occasionally.

I may mention that a small portion of the remains of a small bird were found in the gizzard of the cock bird.

Not being entirely satisfied, as I thought these might be only individual apicides, I waited upon another pair who I knew had their nest about a quarter to half a mile away from my apiary and close to a field of white clover. Upon procuring the cock and hen during the flight time of bees I found the same results, the contents of gizzard being chiefly composed of the remains of small coleoptera and honey bees.

The digestion of these birds is exceedingly rapid. I have seen them pounce down upon something in my apiary—I know now what that something was—three times in a minute, this being quite a common thing when feeding their young ones (five). Both hen and cock forage for the family, the cock being most daring, coming within fifteen yards, evidently watching your every movement.

What an enormous quantity of bees these two pair of birds and their families must have consumed! As I only destroyed them a fortnight ago, I cannot tell whether the rate of missing queens is reduced or not. One most remarkable thing is that I did not find a single remain of a drone; these fly upwards and straight away the instant after leaving the hive. The butcher-bird pounces down upon its prey from some low branch or rail, the home-coming bee flies low also when searching for nectar; the queen flies in neighbourhood of the hive before soaring, hence, I think, the reason of finding all workers and missing queens, but finding no drones.

The Chairman expressed his indebtedness to Mr. Webster for the able paper just read. The red-backed shrike was not common in Kent where he (the speaker) lived, but he had occasionally seen its larder in a thorn-bush, and noticed humble bees, but never hive bees, impaled on the thorns. He should now look out for those birds.

Mr. Webster explained that the red-backed shrike must not be confounded with the grey shrike, which was only a winter visitant. The hen of the red-backed shrike was entirely partridge colour, whilst the cock was a much handsomer bird. It was of an ashen-grey hue, with a pink breast and a broad black band extending from the nostrils to each ear. It had a powerful black bill and a pinky-brown back. The large grey shrike was 10 in. long, whilst the red-backed was only 6½ or 7 in. in length.

Mr. Meggy said, if he had known beforehand the subject of Mr. Webster's paper, he would have been happy to illustrate it by showing the meeting a thorn with a bee impaled thereon. The specimen in question was found by a friend at Braintree, who kept a collection of 'bee curiosities.' The shrike was not a common bird in Essex. He would like, now that the subject of bird enemies of bees was under discussion, to ask the opinion of bee-keepers on the woodpecker. He had heard it said that a woodpecker will tap at the hive and will snap up the first two or three bees that make their appearance on the alighting-board, retiring as soon as the inmates of the hive came out in force.

Mr. Webster said he did not think there was any well-authenticated case of such conduct on the part of the woodpecker. The statement might be true if applied to the nuthatch, which was a kind of connecting link between the shrike and the woodpecker.

The Rev. Mr. Burkitt said there were neither woodpeckers nor shrikes in his neighbourhood, but he felt certain that sparrows and swallows ate an enormous number of his bees. He had seen them fly backwards and forwards from the hive all day long. As a boy he had watched tomtits tapping at hives, and in one instance noticed that an old bird went to and fro the same post. After a time he went to that post, and found seventeen bee-stings thereon, which was a pretty clear proof of the destruction of bees by tits.

Mr. Webster could not endorse Mr. Burkitt's opinions of swallows. He had seen bees chase swallows, and fly a considerable distance after them.

Captain Campbell had seen swallows swarm round his apiary and snap up bees.

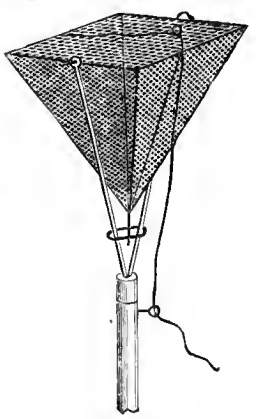
Mr. Webster thought it was impossible to say with certainty that any birds ate bees unless upon dissection of the bodies of the former, bees, or parts of them, were found therein.

The Rev. Mr. Burkitt had seen five or six sparrows at a time with bees in their mouths, to which remark Mr. Webster replied that sparrows would eat anything. He had seen bees frequently chase starlings, which called forth an exclamation of surprise from Mr. Jonas, who had always considered starlings to be fierce birds.

Mr. Meggy recommended all who had not seen a shrike's larder to go to the Natural History Museum at South Kensington, where a case of shrikes was beautifully set up.

Mr. Webster exhibited his new swarm-catcher, and explained his contrivance as follows:—

The swarm-catcher consists of a cage of wire-cloth in the form of an inverted pyramid the base of which opens by means of a cord passing through an eye at the hinged side, the cage is swung in a fork of wire in the shape of the letter Y. At the junction of the fork a sliding wire ring is so attached that if the cage is required to remain upright by pushing it up it fastens the cage securely in that position; when it is required that the cage should swing at an angle to the holder the wire is pulled back. The fork is fitted into a wood handle about two feet long; this handle can be inserted into another joint as with a fishing-rod. If a swarm is upon the onter branches of a high tree the cage is made a fixture, and as many joints are put together as will enable anyone to reach as high as the swarm, the string is pulled leading from the cage, the door opens by so doing; the cage is then dipped quietly over the swarm and with a side movement given by the person holding it, the swarm is precipitated into the cage, the string is left go, and the lid shuts and secures the swarm. All the bees will not have been secured, but they will quickly cluster round the cage. Even when only a portion of the swarm has been caged, if the catcher is placed near where the bees can crawl to it they will quickly join their imprisoned comrades. The queen being usually found in the lower portion of a swarm only a portion of the swarm need be captured in the cage, the remaining bees will cluster on the outside and can then be removed to any position desired. Mr. Webster has allowed a portion of a swarm with queen to remain in the cage for two hours, with the rest of the bees clustering quietly



outside. A swarm, or portion of one, can be captured in almost any position by this means; and if this part is imprisoned the remaining portion will join their comrades, but of course on the outside of the cage, where they remain quietly suspended. The original idea, Mr. Webster informed the company, was taken from an American invention, but he has improved upon it.

Mr. Meggy asked whether the top lid was necessary, to which Mr. Webster replied that it was, because if only a portion of a swarm were taken and shut up in a cage, and that portion did not include the queen, the remainder of the swarm would collect on the outside with the queen, owing to the noise made by the imprisoned bees. Of course it was better to get the queen inside if possible. The price would be about 7*s.* 6*d.*

Captain Campbell thought the invention very useful in cases where swarms settled in the branches of trees. He had once experienced great difficulty in bagging a swarm which could only be reached by means of ladders placed in a dangerous position.

Mr. Meggy wondered what sized out-buildings would soon be required by bee-keepers if appliances were to continue multiplying at the rate of the last year or two.

Mr. Grimshaw said the invention should be called 'Webster's Patent Beacon.' He was afraid that if Mr. Webster, after caging his swarm or part of it, were to walk through his apiary with the 'beacon' on his shoulder, and attempt at once to deposit the bees in their hives, they would rise again. The only way to avoid that would be to place them as soon as possible in the shade, and keep them until they settled down, inserting them on the tops of the hives in the cool of the evening. He begged leave to take exception to the statement that the queen was generally found in the lower portion of the swarm. They were often crawling outside, or in the centre thereof.

Mr. Blow said they were indebted to the Italians for the first swarm-catcher. Such appliances had been a long time in general use among Italian bee-keepers. They resembled in shape a gentleman's high hat, and were about 18 in. in diameter and 3 ft. long, with an opening at the top. There was a netting at top and bottom, so that bees not caught could cluster. The bee-keepers in the Carniolan Valley used a different kind of swarm-catcher, but that was not practicable except in countries where time was no object.

Mr. Webster stated that he had found the swarm-catcher succeed very well. Twenty swarms had already been in it, and sometimes bees were allowed to remain therein two hours—of course, not in the broiling sun. No doubt it was a bad plan to jerk out the bees directly after swarming; they must be allowed to roll gently down, care having previously been taken to make the hive entrance larger, so that they could run in easily. That method could be carried out at any time of day.

Captain Campbell had never known bees to rise as described. He had invariably hived them immediately after taking a swarm.

Mr. C. N. White recommended that swarms should be moved as early as possible after they had well clustered.

Mr. McNally's section-holders were then exhibited, and passed round for examination.

The Chairman considered them ingenious, exceedingly pretty, and handy for carrying, especially by ladies.

Mr. Grimshaw thought the cases before them had been anticipated by those manufactured by Mr. Blow, which he considered almost perfection. The latter were stamped out of metal, two halves being made with glass sides, the section put in, and the joining covered up with a piece of ornamental paper; thus the case was airtight, and the honey would not candy, or would be less likely to do so. These cases could be cleaned and used time after time.

Mr. Blow regretted he had not a specimen section-case with him. They could be produced at a trifle over one penny each. The ornamental paper described by Mr Grimshaw was a gummed label placed all round the edges of the case. At the recent Nottingham show they attracted great attention. The last number of the *Journal* contained an advertisement of the article in question.

Captain Campbell said one drawback in connexion with the paper cases was that the honey often oozed out of the comb and saturated the paper, rendering the case valueless; whilst the metal productions would last, perhaps, twenty years if carefully used.

Mr. Webster said that an air-tight case prevented granulation only to a very limited extent.

The Chairman exhibited two glass sections by Mr. Skermer, of Swanwick, Alfreton. He was of opinion that they looked handsome and attractive, but he saw no advantage in using them.

Mr. Blow had recently been in conversation with Mr. Skermer at Nottingham, when that gentleman stated that he could produce the glass sections at very nearly the same price as ordinary sections.

Mr. Meggy, Captain Campbell, Mr. Webster, the Chairman, and Mr. Grimshaw, agreed that Mr. Skermer's sections were pretty in appearance, but objected to them on the ground that glass was a most unsuitable substance for bees to work upon, because it was a conductor of heat and cold: consequently, fluctuations of temperature would result. Besides, as a matter of practice, the sections would only be used once, because few persons would take the trouble to unpack the glass and put the section together again, after the bees had propolised it all round. Mr. Grimshaw also thought that the glass section would act as a solar extractor, and the honey would melt; Mr. Webster, judging from experience, doubted this, unless the section was exposed to the direct rays of the sun.

Mr. C. N. White showed his combination feeder and combination floor-board, explaining the use of them as follows:—

This is a feeder designed for *slow* or dry-sugar feeding and *rapid* feeding in the autumn with syrup. It consists of a box with glass lid, which slides in grooves from either end. In the bottom is a square three-inch hole. To prevent the sugar falling among the bees there is another bottom (moveable) with bee-space under it, and half an inch at each end, so that when the box is filled with sugar, while the moisture from the brood-chamber and the bees have ready access, there is no fear of waste. In the autumn, or at any other time when syrup-feeding is necessary, a feeder on the Canadian pattern is dropped into the dry sugar box. The bees reach the syrup by passing up one side, while by moving the glass lid the supply of syrup may be replenished at will without the bees escaping.

The floorboard differs from an ordinary floorboard in many respects, chiefly in that it has a fixed bottom and hinged door behind. The object of this arrangement is, *first*, that partly-filled sections, after being uncapped, may be placed under the brood-chamber for the bees to remove the honey, which they will do, leaving the sections cleaner and more fit for future use than when placed in crates above the brood-chamber. Secondly, when in autumn syrup-feeding is necessary, it may be given without in the least disturbing the colony by using a Canadian feeder made to slide in like a drawer, which holds sufficient to provide a colony with food till spring. Notice is also directed to the entrance in the floorboard. The bees enter the hive through a tunnel about 1½ inches long and the width of the hive. By the use of moveable slide-blocks the entrance may instantly be made 1 foot 8 inches, or by the removal of the blocks 16 inches in width.

At this stage of the proceedings Mr. Jonas took the

Chair vacated by Mr. Glennie, who was compelled to leave the meeting.

Mr. Hooker asked whether it would not be as well to do away with the bottom board, and put the hive on top of the feeder.

Mr. White objected that that arrangement would alter the whole character of the hive, and necessitate a separation of it whenever the bees were to be fed; whilst by his method the feeder could be slid in without any difficulty.

The subject was further discussed by Mr. Hooker, Mr. Meggy, the Chairman, and Mr. White, after which the latter gentleman exhibited his 'Cottager's Hive,' and described it in detail.

The hive is a modification of the one described and illustrated in the *Bee Journal* and also in the first number of the *Bee-keeper's Adviser*. It is intended as a means of bridging the gulf that exists between the skep and the bar-frame hive; and whereas, when the skep system has been discarded the skeps and supers (except when brought into use for hiving swarms) are thrown aside and represent so much loss, the body-box and supers of this hive may be permanently used as section crates, the former holding two tiers of sections and the latter one 18 sections. In each case the bottoms are fixed, half bee-space being provided above the sections and below the bottom of the case. The bees pass from box to box through six ⅜-inch holes running the whole length of the case 2, under the centre of each row of sections. To prepare the body-box for a swarm and also the super cases for super honey in fixed combs, if preferred saw-cuts are made in the sides of the cases so that sheets of foundation may be dropped down and then fixed with melted wax or by pressure.

Mr. Hooker objected entirely to the hive, and looked upon its production as a retrograde movement to the extent of forty or fifty years. Forty years ago he had used bars, but his anxiety at that time was always to get the comb built in the same direction as the bars, whereas Mr. White apparently had striven in exactly the opposite direction. Besides, he believed that under Mr. White's system the foundations would not keep their position, but would fall one against the other and form a mass on a corner of the hive. Moreover, when the section crate was put in, the bee way through would be cut up into quarter inch spaces, leaving far too little room for bees to pass one another to and fro.

The chairman also thought that propolisation across the bars would cause great trouble.

Mr. White said that difficulty had not arisen with skeps, from which view Mr. Hooker dissented. Mr. White (continuing) said he had built his hive with the object of bridging the gulf between the skep and the bar-frame hive.

A long discussion then ensued, principally between Mr. White and Mr. Hooker, the latter complaining that Mr. White had taken an immense amount of trouble to make it almost impossible to prevent the combs from falling on each other, and also to prevent the cottager from getting the combs out; to which Mr. White replied that his plan was quite in accordance with the opinions of Mr. Abbott, who was looked on as a high authority by bee-keepers. Cottagers were not advanced bee-keepers, and could not be expected to conduct their apicultural pursuits in the same way as the latter.

The Chairman, while agreeing to a great extent with Mr. Hooker, assured Mr. White that the adverse criticism he had suffered must not be taken in a personal sense, but only as an evidence that they were anxious to discover and bring into use the best scientific and practical methods.

Mr. Hooker proposed and Mr. White seconded a vote of thanks to the Chairman, who acknowledged the compliment, and the proceedings were brought to a close.

DEVON COUNTY AGRICULTURAL SHOW.

In your report of Devon County Agricultural Show at Barnstaple, in Class 10 the winner of first prize ('illegible') for most perfect bar-frame hive was J. Trebble, same as Class 11. It is very creditable to this local apiarian that he won both first prizes in open competition. His address is 'Romansleigh, South Molton.'—ALFRED BROWN, *Parracombe, Barnstaple.*

BEE-KEEPING IN HERTFORDSHIRE.

On February 9th last, Mr. J. P. Sambels lectured to the members of the Hertford Mutual Improvement Society on 'Parthenogenesis.' At the conclusion of the discussion that ensued, the lecturer invited those of the audience who had expressed such interest in the natural history of the honey bee, to visit him in the summer when he would be happy in giving them a display of live bees. This led to the committee accepting the invitation for their summer soirée. Consequently on Thursday last the members, to the number of fifty and upwards, proceeded to Cole Green, the residence of Mr. Sambels, three miles distant from Hertford, some by train, and others preferring the walk which is a very pleasant one. After visiting some places of interest in the neighbourhood, the company sat down to tea in the open air in Mr. Sambels' meadow at 6 p.m., the arrangements of which had been entrusted to a committee of ladies. After tea a photograph of the company was taken by one of the members, and Mr. Sambels afterwards lectured on bees, driving a skep, and exhibiting a stock of Carniolans in a bar-frame hive. The manipulations were conducted in the tent of the Herts B. K. A., borrowed expressly for the occasion. The impunity with which the lecturer took the bees up by the handful, and the way in which he carried the queens around the tent on his fingers caused much surprise and amusement amongst his audience, most of whom knew little or nothing of practical bee-keeping. Mrs. Sambels, like a true bee-keeper's wife, showed her confidence in the bees by going into the arena and handing her husband what he required to illustrate his lecture. A number of questions were asked, and the audience listened patiently for nearly an hour and a half. Fortunately, the day chosen was remarkably fine, and the evening warm and balmy, and the company returned to Hertford about 9.30 by train, having accorded the lecturer a hearty vote of thanks, and another one to the ladies who had provided the tea, and congratulated one another on having spent an enjoyable outing. Mr. Sambels is to be congratulated on the members assembling in such numbers, and the incident shows, that, well as Herts has been worked by bee-keepers, the interest in bees is as great as ever.

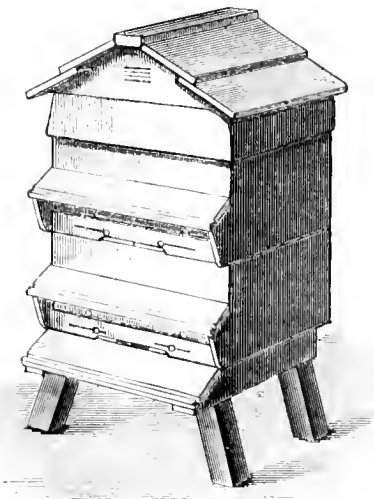
THE ROYAL NOTTINGHAM HIVE.

Class 185.—In our report of the show at Nottingham last week, page 341, we promised to give a woodcut and full description of the hive that took the *first prize* in this class: For the best and most complete hive for general use, &c., price not to exceed 15*s.*, unpainted.

This was awarded to Mr. Charles Redshaw, of South Wigston, Leicester, for No. 22 in the catalogue, a hive which fulfilled all the requirements of the schedule in a very satisfactory way. It was well made, of good material, and good design, and well merited the honours it obtained. It consists of floor-board on four short stout legs, sufficiently high from the ground, and of a convenient height for manipulating when the second storey is on. *The floor* is made of ⅞-in. red deal boards, with rebated joints, and nailed to 1-in. bearers 3 in. deep, with a slanting alighting-board in front.

There are two *chambers or body-boxes*, which are

similar and interchangeable. The joints are bevel rebated, and are weather-proof, thus enabling us to *slide* them one over the other from the back without crushing the bees. The sides are $\frac{5}{8}$-in. pine, the backs and fronts of $\frac{3}{4}$-in. pine. The top edges of sides and backs are flush with tops of frames, the front is the same width as sides and back, but is raised $\frac{3}{8}$ in. from floor-board, so as to give an entrance the full



width of the hive, and stands $\frac{3}{8}$ in. above the frames to stop the entrance of the second chamber when storeyed on it. Grooves are made to receive the inner walls, which are of $\frac{3}{8}$-in. white deal. This makes them true and rigid. The space between is filled with cork-dust.

Frames.—There are ten of these, of the broad-shouldered pattern, cut out of clean stuff, true to size, with saw-cut in centre. There are two clamped and webbed dummies. The frames run parallel with the entrance, but we understand that the exhibitor is prepared to supply loose front and back inner walls, whereby the frames can be used either way, or will make the chamber with frames running at right angles by arrangement.

Porches.—The lower part of sides of chamber runs forward as brackets to support the top, which forms the porch. This is not too large, at the same time allows free flight for the bees, and ample protection for the entrance; and when tiered up, the upper porch covers the only joint that is not rebated. The strength and appearance of the hive are considerably increased by this mode of construction.

The *Entrance shutters* are original and are very simple, at the same time the most convenient we have seen. The shutter is so arranged that we can have the whole width of the hive as an entrance by raising it and turning a screw-eye to hold it; and when down any size entrance from 8 in. downward until it is completely closed can be regulated with the greatest ease. The slides cannot at any time fall out or get in the way.

The *Roof* is made in two parts, properly speaking, a lift and roof, which greatly facilitate winter packing, feeding, and the wrapping up of section-cases, as the roof is put on after all this is done and made snug. The roof and lift are made of $\frac{3}{4}$ red deal.

The *Section Case* is made to contain twenty-one $4\frac{1}{4} \times 4\frac{1}{4}$ sections and is arranged so that seven, fourteen, or twenty-one can be worked at pleasure. There is a passage-way round the ends of four-way sections,—a $\frac{3}{8}$-in. board which is rebated out in the centre to $\frac{1}{4}$ of inch in thickness, to form passage way, is put on either side. The seven sections on one side being removed, a piece of zinc is placed at the bottom to keep the bees down, the rebated board is then placed against one side of the centre row of sections and gives a passage-way round the ends, reserve sections being placed above the tin, keeps everything in place. The other outside row can be filled in the same way. Spiral springs are used to keep the glass and sections tight in their places. There are two circular shutters with hinges and buttons; these are useful to look through, to see what is being done in the under-cases when two or three cases are tiered up.

The following is the list of prices of the different parts of the exhibit required by the schedule: Stand and floor-board, 1*s.* 6*d.*; body boxes with frames, two dummies, entrance and porch, 5*s.* 6*d.*; second similar body box and porch without frames or dummies, 3*s.*; case of sections with separators, 3*s.*; roof (in this case in two parts). 2*s.*, marking a total of 15*s.*

The exhibitor undertakes to supply any of the parts separate at the prices named.

Class 186. For the best and most complete frame-hive for general use, &c., price not to exceed 10*s.* 6*d.* unpainted. This first prize was also awarded to Mr. C. Redshaw for No. 38. It is exactly similar to No. 22, and will interchange with it so far as it goes; but there are no legs to the stand, only one chamber, and the usual case of twenty-one sections is substituted for the one described above. This is a very good hive and cheap at the price 10*s.* 6*d.*

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements.)*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

THE MINORCAN QUEEN.

[1723.] I am glad to be able to say that the queen is alive and well, and under the stimulating influence of my system of gentle continuous feeding is laying rapidly. She has been at liberty a week, and for her subjects' encouragement I have removed two combs full of eggs and replaced them with two others full of sealed brood. I had a strong swarm of hybrids on Saturday last, and to make sure of an early supply of Minorcan queen-cells, I took away the queen of the swarm and all the brood-combs from the parent stock. I then put the two combs of Minorcan eggs in the centre of the hive and filled it up with broodless combs partly filled with syrup and let the swarm fly back to their old abode, where they sulkily crowded about the entrance as if disappointed at finding so great a change in their home. They are a strong lot and had fifteen queen-cells on their combs, and as they have now only the two combs of eggs to deal with I am hoping that a goodly number of Minorcan queen-cells will be raised.

I am naturally proud of my success in safely introducing the first Minorcan, but I feel that I have no right to monopolise her, as she was evidently intended for the benefit of British bee-culture. I shall, therefore, be most pleased to send a young virgin queen to every member of the committee of the British Bee-keepers' Association, who will signify his willingness to accept one, or if preferred will send an inch or two of comb with eggs and accompanying bees, that a queen or queens may be raised by each in his own apiary, and all risk of introduction avoided. Mr. Andrew's fear (quoted on page 339)

that Minorcan queens are too prolific, will not deter me from raising a number of young queens from the pure mother, and as my apiary of sixty hives has scarcely a pure English black in it, it will be interesting to watch the effect of cross-fertilisation upon them. If there be truth in Von Siebold's theory of parthenogenesis, the mating with Ligurian or hybrid drones ought not to cause any change in the colour of the drone progeny of the young Minorcans, which I expect will prove as black as the queen and worker bees. I intend to try and raise some pure Minorcan drones this season by keeping the hive containing the queen filled with brood, and shall endeavour by feeding to persuade her majesty that swarming time has not passed, and if I succeed shall endeavour to secure some purely mated queens in the autumn. My hybrids are chiefly crosses between pure Ligurian queens and the drones of Cyprian, Carniolan, and English bees and their degenerate progeny. I have two or three stocks with evidently a taint of Cyprian blood in them, for although splendid workers they are as pertinaciously savage as the pure race, and, like them, are a nuisance.—C. N. Abbott, *Southall, July* 23, 1888.

NATURAL BEES-WAX NOT WHITE.

[1724.] I find *newly* secreted bees-wax white, as your correspondent, Mr. Buller, gives testimony, but not then its natural colour, even could it be had in sufficient quantity for the market, and its further use as a foundation. When of full sufficiency for its purpose to the bee-master, and a bulk product, it is of changed colour and quality, yet even an unused and just secreted bees-wax is altered in colour by melting, though but slightly; but the larger and more important quantity is acted upon by bee-operation as follows:—Bees-wax being an absorbent of colour and odour, is affected: pale yellow, and various colours, to a dark brown—originally in a greater or less degree, by the first and successive pasturage from which the bee is gathering and storing, accelerated by the consumption of the store for the life and work of the bee; hence an odoured vapour laden with colouring matter is prevalent, not acting on the wax alone, but visible upon the inner walls of the hive and supers, often too much in force in badly-ventilated and frame-crossing entrance hives, defacing sectional and other finished comb work. We then get a natural bees-wax, for, strictly speaking, one cannot call that natural which *Nature* has not fully applied, and it is wax of such natural production the bees delight to use, giving *it* the preference above, and beyond, the same wax used as a foundation, either prenatural or robbed of its first nature, by exposure to strong daylight, chemicals, or adulteration. To prove this I have bleached the natural bees-wax (as sample herewith) so that a full sheet can be given equally white and the natural colour within the same section, and the yellow half was first drawn and worked until the colour and odour were in part dissolved, and the white half, I take, having again in part absorbed its natural odour, if not colour, was given attention.

Having but little time to write, hardly that practical observations and work can give, I do so now, not to provoke controversy, but rather a scientific rendering of the whole matter from some able pen, and also to show that in my judgment 'Useful Hints' and the experienced Mr. J. M. Hooker have not erred—those, rather, whose *white* and pure bees-wax can never be given in bulk, and as a prior acceptable foundation, by the honey-bee.—John H. Howard, *The Model Apiary, Holme, Peterborough.*

BRITISH COMB FOUNDATION.—WHITE WAX (1700.)

[1725.] Mr. Geo. J. Buller, the manager of Mr. Blow's Apiary, has quoted an old saying, which he suggests applies to my letter (1693). I am sorry my remarks as to the colour and purity of wax should have '*sorely puzzled*' him. He has, I do not question, had considerable opportunities of judging of the quality of wax.

I am somewhat surprised, after his remark as to '*not believing anything you hear*,' that he should have quoted from one of Huber's works, in reference to the colour of wax; for Huber being blind, was of necessity obliged to depend upon his *faculty of hearing* for all the details he has given in his works, and *if* we apply the '*old saying*' we cannot believe what he writes as to the colour of wax or anything else.

I am quite aware that the wax-scales of which Mr. B. speaks are very light in colour, almost white; and it must not be forgotten that, from their extreme thinness, they are very readily bleached by exposure to light and air. These wax-scales as they come from the bees vary in colour according to the source from which the honey is collected, and this is clearly shown in the comb and sealing in sections filled with honey from fruit, sainfoin, and white clover. Professor Cook says the pellets are light-coloured, very thin and fragile: he does not say white. Mr. Cheshire, in *Bees and Bee-keeping*, says, white or bleached wax '*is little fit for apiary work*.' Mr. Otto Hehner, in his letter on adulteration (1694), says, '*the yellow colour natural to wax* can be removed without bringing into the product any admixture foreign to it.' On page 315, line 18, my remark agrees with that of Mr. Hehner, that it can '*be bleached white without any addition or adulteration*.' The pure wax of commerce is, to a very large extent, yellow in colour. There is, I know, a little of a very light colour imported, but it cannot be called white.

Mr. Raitt of Blairgowrie has forwarded me a sample piece of very light wax, and informs me that he is going to say something about wax in the next number of your contemporary the *Record*.

So far as I am able to judge the sample appears to be genuine wax, which, he says, he will guarantee; it is very light in colour, but it is not white. Mr. Raitt calls my attention to the strong smell of honey that it has to show its purity. It has a very strong smell of heather honey, which cannot easily be mistaken if we have ever had any experience of it.

In a letter to him, I express it as my opinion, that the wax has been taken from supers of virgin comb in which the honey was too thick to be extracted and was broken down in the attempt, was granulated (or, it might be, passed through Mr. Raitt's honey-press), and the comb and honey melted down together, and when cold the wax taken off the top. This would in some measure account for the strong smell of heather. I do not know, but I should think, if a portion of strong-smelling honey was added when in a molten condition, the wax would partake of the odour. Foundation, of the colour and smell of candles, although pronounced 'commercially pure,' should be used with caution. There is a large amount of foundation sold that is more or less adulterated, and, when used, causes great trouble and vexation to the bee-keepers using it. It is only fair and right to the honest manufacturer and to the bee-keeping community, that it should be exposed, and stopped if possible.—John M. Hooker.

THE LAYING CAPACITY OF GOOD QUEENS.

[1726.] In the first place, if I conveyed to the minds of my readers, by an article, that a queen lays 3000 eggs every day for two or three months in succession, I wish to say that I did not intend to convey any such idea, for I am satisfied that all queens have certain periods of rest, during which they lay very few eggs—the periods being brought about by the weather, secretion of nectar by the flowers, amount of pollen brought in, &c.

Then, again, I am satisfied that queens lay eggs at many times which the bees never allow to hatch, and also that eggs are kept from hatching for indefinite

periods by the bees, when again they allow such 'kept' eggs to hatch within twenty-four hours to a far greater number than any queen could lay in a day, the bees having all this under their control, all of which has an important bearing on the subject. However, the important part of the subject is in having a queen capable of laying 3000 or 4000 eggs a-day when we most need them, and not one that can never lay more than from 800 to 1200 under any circumstances, as is frequently the case with cheap queens, as the past has shown me.

A queen was once sent to me as a present by quite a noted queen-breeder, and with all the coaxing that I could do, she would not exceed four Gallup frames of brood, her usual amount being three. I kept her for two years hoping that she would do better; but as no better results were attained, I became disgusted with her and killed her. But more closely to the point: 'How do I manage to make nine Gallup frames give room enough room for a really good queen, as it would require eleven such to give room for a queen capable of laying 3000 eggs a-day?'

In this locality we have, as a rule, but one really good honey-flow, that being from basswood, which blooms from July 5th to the 15th, and lasts from one to three weeks, the extremes being three days for the shortest I ever knew, to twenty-eight days the longest, in which honey was gathered from it.

Now, as the wise man would prepare for a harvest by engaging help for a large harvest of any kind, having that help on hand at the needed time, I try to take advantage of what these good queens can be made to do by crowding them to their utmost capacity from twenty-five to fifty days before the basswood opens, so as to get the largest possible force of workers on hand just at the right time to give me the best results. To this end my hives are made, so at this time of the year they can be enlarged by slipping out partition boards, so that ten, eleven, twelve, thirteen, fourteen, and even fifteen frames can be used as a brood-chamber, thus giving the best of queens a chance to do all she is capable of doing. Fifteen frames in a hive, filled nearly solid with brood thirty or forty days before the honey harvest, is one of the most pleasing sights to a boney producer of anything in this line of business, except tons of honey being exchanged for *cash* at the end of the season.

Later on, the object of the bee-keeper who has no fall harvest should be to reduce the brood as much as possible, consistent with having the colony in good condition for winter, for the rearing of brood *very largely*, right in the height of the honey harvest, means much of our surplus being fed to this brood, which are only to become useless consumers after the honey harvest is over.

Working along the line of this reasoning (which nearly twenty years of experience has proven to me to be sound logic), as the honey harvest commences, I begin to work in an opposite direction, by contracting the room given to the queen, till, at the close of the season, five to seven Gallup frames of brood are all that my hives contain, and these are frequently from a quarter to two-thirds full of honey. This gives all the bees require for winter, and nearly enough honey for the same, so that little work is done along the feeding line.

If the above is not the right principle to work bees upon, then a part, at least, of my bee-keeping has been in vain. A thorough trial of the plan will, I think, convince the most sceptical that it is *the* correct plan to work on.

I will only add that if queens of poor or only moderate value are used, our crop of honey must be poor or moderate; for only as we have a large number of bees at the right time can we expect to attain to the highest point in the production of honey.—G. M. DOOLITTLE. *Borodino, N. Y.* (*American Bee Journal.*)

LAYING POWERS OF QUEEN.

[1727.] This subject comes up again in a late issue. '*In answer to inquirers*,' 5000 bees weigh 1 lb. 'My 100-pounder friends,' with forty standard frames in hives, will require 20 lbs. of bees to well cover them in summer, or 100,000 bees in number. To produce this number the queen would have to lay, on an average, 1200 per day from the 1st of March to the 1st of June without interruption or any loss of life. Henry Taylor puts the highest number from 600 to 900 per day. Mr. Taylor was a very practical man, and no doubt gave those figures from practical observation, but *how* he arrived at those figures he does not say, nor do our more modern writers tell us how they have discovered the laying power of the queen to be equal to 2000 or 3000 per day, neither do they tell us how long she is able to continue that amount of egg-laying per day. There are 1440 minutes in a day of 24 hours, which would tax the laying powers of the queen to about three eggs per minute, or two eggs per minute would be 2880 per day. If this result is produced by stimulation, it is quite evident (to me, at least) that such excessive labour must prematurely exhaust her power of reproduction. I therefore am still of opinion that it is morally and physically impossible for one queen to produce and sustain the number of bees required to fill one of those monster forty-frame hives, especially in a season like this, such terrible gales of wind and storms of rain: hail as big as small marbles only a week since. Last Sunday was a day I shall not soon forget. I left home about 10.30 a.m.; very cloudy, but no rain or sunshine, but the bees were flying freely. About 11 a.m. it came on to rain in torrents, which caught the bees out, and, unable to reach their hives, they fell on the ground on the return home exhausted in front of and underneath the hives, where they collected in heaps and remained all night, and the next day up to 4 p.m. in a continual downpour of rain all the day until about that time, when I commenced to pick them up. The flowers and grass were literally black with bees crawled up on the top. I picked off thousands, put them into a box, and took them in to the kitchen fire, when most of them revived. I took them down to the apiary, when they flew direct into their hives. Doubtless there were thousands lost in the fields, not able to reach even to the ground around their homes. This I found more especially with my strongest hives, being literally starving. Up to this, 9th of July, I have been compelled to risk all weathers in order to get sufficient to live. Yesterday I again examined, and took off about twenty crates of sections, but all as empty as when I put them on a month ago; and, what was worse still, they had not a single cell of honey sealed over. The 9th and 10th was cold, north-west wind, blowing a gale, with heavy storms of rain. Yesterday and to-day are better, warm summer days, so that if this weather should continue for a month, the bees will no doubt be able to collect sufficient for their winter store, but I do not at the best expect to get a pound of honey to sell, so that the harvest with me will be *nil*.

I began to stimulate as soon as the weather would permit. I continued it up to the middle of May, with the view of bringing some of my hives up to forty frames, but have signally failed. My best would only cover thirteen frames in the middle of June, when I gave over and put on twenty-four sections. These are not full of bees now. I have not removed this crate, although they have not done anything yet, because, if I did, I should most likely compel them to cluster outside.

I made about one dozen stocks last autumn with *driven bees*, all young queens from old stocks that had swarmed. Five of them died, leaving plenty of stores in all the frames. The others have not been prolific; none will cover more than nine or ten frames. One of my best is

a three-year-old queen. This reminds me of what the old man I had them off said. He always keeps his first swarms every year, because he found them to answer best. He has kept bees all his lifetime, and his father before him, but this has been their invariable practice. This theory conflicts with modern notions. I never interfere with my queens. I find if one is not productive this year, one will be next. I find there is a great deal of difference in bees, that is, in looking at their ancestors for three or five years back, never prolific, I find some of my bees are hybrids, very much Italian. How they became so, I cannot account, as none of the Italians that I know of are kept in this neighbourhood.—SHERBORNE, *Dorset, July 12th.*

BEST TIME TO FINISH EXTRACTING.

[1728.] As the seasons are so different in producing honey it is impossible to state any particular time to stop extracting. It is safe to continue as long as the honey flow continues, which any experienced apiarian can tell by the action of the bees; they are not so busy and they very soon begin to draw around wherever there is honey exposed. They will try and get in at the windows of the honey room and the door if they are left open. The honey in the supers ought to be removed at once whenever the flow stops, and if there are any of the hives light, feed at once; first feed all poor unfinished sections; afterwards give them cards of comb full of honey saved for the purpose; examine in a week afterwards, or two weeks when the most of the brood will be hatched out of the comb as they might feel heavy when full of brood, but if light when the brood is all hatched out feed until they are the proper weight. The honey in the comb of the best supers taken off may be fed back one comb at a time, turn back one corner of the quilt, lay a couple of pieces of wood on the top of the quilt lay your card of honey on the cross pieces, cover up tight and when empty give them another comb until they have enough and your surplus combs will be nice and dry for storing away for another season. If your hives are well stored with good honey, plenty of young bees, a good queen when put into winter quarters, there will not be much danger in losing many of them; they will come out strong in the spring. I am not much in favour of feeding syrup or any food made of sugar as long as you have plenty of honey, as it is the natural food of the bees, all feeding with honey ought to be done early, as soon as the honey flow ceases. The bees will not carry the honey out of the supers and store it in the brood-chamber as long as the supers are left on, and if they choose to get very late honey of buckwheat they will store it below when the supers are taken off, not otherwise.—DR. DUNCAN (*Canadian Honey Producer*).

WINTER PREPARATION.

[1729.] Winter preparation is a matter of the utmost importance, for upon the care taken in this respect will depend largely the prospects of another year. This preparation should be begun early; in fact it cannot be commenced too soon after the honey-flow ceases. Each bee-keeper should know enough of the flora of his locality to be able to determine when no more honey should be expected, and should then at once take care of the gathered crop, and begin putting his colonies in shape to withstand a long winter's siege.

It makes but little difference in preparation whether the bees are to be wintered on summer stands or not so far as early labour is concerned, as the principles governing the matter are the same in both cases. The first thing necessary is to see that ample stores will be left in the brood-chamber, and in position such that the bees can get at them at all times. I used the Langstroth hive, and consider that seven frames spaced in the room allowed in summer is about right. I have all preparations completed by October 1st, and they consist in having seven frames filled and capped with pure honey in their upper half at least. The queen should be urged to deposit eggs as long as there is a prospect of their rearing brood that will take at least one flight before the winter sets in. Localities differ, so that it is impossible to set a date; each must decide for himself. I have not found that it makes much difference wintering on summer stands whether chaff or single-walled hives are used, as I have been equally successful with both.

On or about the 1st of October I see that ample stores are contained in the frames as stated above; I then put a 'Hill's device' or its equivalent over tops of frames, covering the same in with a piece of old carpet, or something of the kind. I then put on an upper storey, and fill in the same with forest leaves pressed loosely down, cover the bees up, give a large entrance, and leave them alone till the following spring. The 'Hill's device' gives an inch or more of space over tops of frames, and allows inter-communication with every frame in the hive, without breaking up the cluster. I do not think that the cold of itself kills our bees, but that want of stores or excessive moisture does do so.

By giving ample stores we can guard against starvation. The 'Hill's device' allows the bees to travel freely and safely from one side of the hive to another, and the forest leaves allow the moisture to pass off out of top of hive, while at the same time retaining the necessary heat. Want of space demands that I should outline briefly, but I think that any bee-keeper can understand the principle stated. This may be varied as circumstances seem to require, but by using the principle as indicated, I have been able to winter on summer stands for years without 2 per cent of loss.—J. E. POND, *No. Attleboro, Mass., U.S., June 8th* (*Canadian Honey Producer*).

SKEPS REVERSED. (1697.)

[1730.] Having noticed that the letter of the Rev. W. E. Burkitt in your issue for July 5th remains unanswered, and believing that I am the friend at Swindon alluded to, I venture to give your readers my experience with the above system. I really do not think I can do better than refer them to the excellent article written by yourself, vol. xiii., page 401, where I first borrowed the idea. To begin with, having procured the head of an old barrel, I cut with a running saw a circular hole, slightly smaller in diameter than that of the skep I wished to reverse. To this I fitted four legs of sufficient height from the ground to allow my skep (which I should say was a flat-topped one with a hole in the crown for supering), to rest on an old cheese-vat. All I had then to do was to cut a passage for bees to pass through crown-hole of skeps, which is very easily cut with a chisel in the vat or floor-board. The crates I have always used are an adaptation of the Hereford Simplicity, made by myself from a copy supplied by Mr. Hole of Ledbury. They can be tiered to any height you please; and I have had them three and four deep. I generally work fifteen to eighteen 1-lb. sections in a crate; and in no case have I ever had a queen enter these, though I never use an excluder.

My thanks are also due to Mr. Garratt, for his excellent description of this system, illustrated with a capitally-made hive and crate, which he exhibited at our show at Swindon.

Unlike the Rev. W. E. Burkitt I have never had a swarm issue from a reversed skep, but I think due allowance must be made for the season, as swarming has been very prevalent this season. My first reversed skep was in 1886, when I tried it after the hive had swarmed twice, and then I managed to obtain a fine bell-glass. The best, however, was last season, as one single hive yielded

eighty-seven 1-lb. sections with about forty from another. The present season being a bad one my highest amount of sections on a skep is thirty, some of these are near completion.

I think this system will compare favourably with many frame-hives, though I must say it is rather more trouble.

My apiary at present consists of thirty stocks, six being skeps. This is a splendid locality for honey as we have abundance of white clover, which the unfortunate weather we have had has prevented the bees from visiting. I don't however, despair of a slight honey yield from limes, should the weather turn favourable. I am afraid the Rev. Mr. Burkitt has placed a far too high a value on my experience of this system. I enclose samples of wild flowers from which my bees gathered more honey than from any other source. I should be pleased if you would give me the names of them. (See Notices to Correspondents.) I hope this description will satisfy your correspondent 'Amateur.' Further questions he, or any of your readers, may choose to ask, I shall be pleased to answer.—JOHN C. WHATLEY, *Grove Farm, Brunsdon, Wilts.*

TOADS AND BEES. (1710.)

[1731.] My bees being high busy, I placed a sloping board from the ground to the alighting-board. Passing in the evening I noticed an impudent toad sitting on the edge of it, watching for a victim. On seeing me he took a header into a wide ditch three or four feet below. The next evening I mounted guard and found the fellow had climbed up to the same spot on the same business; I had not long to wait before out came his tongue like greased lightning and snapped up one of my little pets. I soon dislodged him from his perch and taught him never to come there any more. Toads are not dead body-snatchers, they never take anything unless it is moving.—R. GOUGH, *Llanfihangel Station, near Borth, R.S.O., July* 20.

SUDDEN DEATH: STUNG BY A BEE.—Miss Ella Baker, youngest daughter of Mr. T. Baker, of the Inner Temple, and Kingscote, Wokingham, was stung under the eye by a bee in the garden, about 12 on the 13th instant. She treated the matter lightly, and suffered no pain after the customary simple antidote had been applied, saying that she had been stung before, the swelling would run its course and go down again, and she continued to be quite cheerful down to 8.30 on the 14th, when she fell asleep on the sofa. At 9.15 she suddenly woke up in a convulsive fit, and died from syncope within a minute, aged twenty-nine. Miss Ella Baker was highly intellectual, and the author of 'Bertram de Drumont' and other tales for young people; also 'Stories from Old History,' 'The Sovereigns of England,' 'Songs of the Seasons,' and other fugitive pieces.—*Newspaper Paragraph.*

Respecting the foregoing Mr. W. B. Webster writes:—'We have made inquiries into the above case and find that the young lady was stung by the side of the nose near the eye on the morning of Friday the 13th July; her eye was somewhat swollen after, but no ill effects were experienced from the sting, as during Friday and Saturday she performed all her household duties and ate her meals (vegetarian) as usual. Late on the Saturday evening she was seized with convulsions and died just before or immediately after the arrival of the doctor. The medical certificate state that death occurred from convulsions and syncope. We have this latter information from very good authority. She had been stung twice before, but, except from local swelling as in the former case, she experienced no ill effects. She was a lady of exceedingly delicate constitution and suffered from abscesses in her neck. Her sister died very suddenly some few years ago at about the same age.

REVIEW.

HOOKER'S GUIDE TO SUCCESSFUL BEE-KEEPING. By John M. Hooker, member of the Committee of British Bee-Keepers' Association. Published by John Huckle, Kings Langley.—The author is well known as a contributor to our *Journal*, and has been a member of the managing committee of the British Bee-keepers' Association from its commencement. He has also acted for several years as a judge at many of the shows held throughout the country. He has kept bees since he left school, and has therefore had a long practical experience in their management, more especially as he has practised the methods adopted both in Europe and America. The object of the book is to comply with the wish of friends that he should give a few plain instructions as to the best way to commence bee-keeping, so as to help beginners in the selection of such appliances as are useful and necessary for the purpose of carrying on the pursuit with the object of adding in a slight degree to their incomes. Mr. Hooker has been a successful exhibitor of both hives and honey, and received the first prize in the Bligh Competition, open to all England, for the largest return from one hive, and confines his remarks to such elementary and practical remarks as may be most useful. The price of the book precludes the possibility of entering as fully as he could wish into the details of the various methods of management. It contains sixty-two pages, and many of the more recent hives and appliances for the production of comb and extracted honey are illustrated.

Echoes from the Hives.

Freestone, Bath, July 21*st.*—The weather has been no better here than in any other part of the country; we have not had a single real summer day such as we had so many weeks of last year. It was fortunate, indeed, the weather was so fine during May, my bees filling their combs three inches from the top bars, but it is all gone now, bees having had to live on it for the past six weeks. I am generally content if I can make my bees bring in enough to cover expenses, but this year it is all expenses and no returns. Why don't 'John Peel' (1715) paint his wooden feeders with wax, it would help to make them water-tight and prevent any syrup from soaking into the wood?

Honey Cott, Leamington, July 23.—Rain! rain! rain! The merciless rain puts one in mind of a season in the infancy of the *B.B.J.*, when there was a sketch of a bee with an umbrella given as the trade-mark of the season. Poor drones! being terrified and driven out before their usual time, while those not come to maturity have been lugged out of their cells, and cast out of the hives. Poor bees! when it is a bit of fine weather, off they go in their thousands, ofttimes to be driven back before they have had a chance to get even a little watery honey; many, no doubt, being cut down by the heavy rain showers we have had during the past week, while others have just managed to get through after a heavy downpour of ten minutes or more. Poor bee-keepers! what does all this bad weather mean but that later on we shall have to dip rather deep into the pockets and the sugar tubs? Well, even if this season is a failure, we must hope for the next to be better. Perhaps it would not have been good for us to have two good seasons together. All I know is, that if at the last moment we have a good shower of honey, as the Yankees say, my pots are right side up to catch it.—JOHN WALTON.

Rehoboth Cottage, Warbleton, Sussex.—Never before in my bee-experience have we had such a summer, bees actually brought to death's door by starvation at this

(23rd) middle of July. I believe in all my twelve hives there are not five pounds of honey. Some I find, on examination, are quite destitute, and have drawn their brood from the cells, both drone and worker, and the majority of drones are despatched. The question is, Will it pay to feed them up for twelve months, or sulphur the lot at once, the meadows nearly all mown, and no prospect of better weather? I suppose we must wait and I hope a little longer yet.—H. Neve.

NOTICES TO CORRESPONDENTS & INQUIRERS

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

W. T.—*Parsley.*—Bees are fond of the garden parsley (*Carum Petroselinum*), though the flowers do not secrete much honey. *Apium* is the generic name given to celery, &c., the deviation of which is obscure.

J. C. W.—The flowers enclosed are: No. 1, *Centaurea nigra*, No. 2 is probably a scabious, but we are unable to determine which in the absence of leaves.

Aged Amateur.—1. *Destruction of Drones.*—You hived a swarm, presumably in a hive not containing stores, and the bees brought into action their Draconic law of destroying useless 'members of their community' by at once by killing off drones. They certainly treated them with more consideration than you have treated their remains, for these arrived—a shapeless, squelched compound, abdomen, thorax, and head, being intimately mixed together. 2. *The Wind's Influence on Direction of Swarms.*—If you refer to the direction of the wind on the days the swarms went to the garden you speak of, you will, doubtless, find it blew in a south-easterly or easterly direction, and that they took up hill also. We know of no reason why they should not settle near home if there are bushes or trees near. They may have so settled and risen again. The good wife who says she knows when a swarm is coming by the conduct of her bees, probably recognises in this the slight excitement caused by the efforts of scouts to find a new home.

A. Wilson.—*Dead Queen.*—Your dead queen seems to have been in full laying, and has not been stung to death. It is evident that for some reason or other best known to the bees they have thought fit to supersede her. If you have not overlooked a queen-cell in your examination, you will, no doubt, find some by this time.

Rev. A. Booker-Hill.—Your letter has been forwarded as requested.

T. Bonner-Chambers.—When a number of inventive minds are brought to bear on the improvement of any appliance, it is remarkable how many slight gradations there are, all of them leading on step by step to perfection. This has been noticeable in the various improvements in making sections, and there is a difficulty of deciding where one maker begins and another ends.

Thomas Boycott.—*Italian Strain.*—Some one in your district has, or has had, Ligurian blood in his apiary, producing hybrid drones, and these have mated with your black queen, thus giving you a slight strain of Italian blood, and, consequently, improving your breed.

D. H. Durrant.—1. *Planting for Bees.*—Your space is far too limited to be of real use to the number of colonies you name. You cannot do better than try Arabis (white), crocus (yellow), wallflowers, mignonette. Limnanthes is grand when grown in masses, we have beds 100 feet by 12 feet that everyone admired, but in small patches it is untidy. 2. *Space for Apiary.*—To accommodate twenty-four hives set in quincunx fashion, you should occupy at least 40 feet by 22 feet. You would find this too close in case of family quarrels between the different colonies. Ashes or sawdust would make a good coating under your hives. We should prefer ashes.

H. Neve.—*Name of Plant.*—This is not the true heather, but one of the British heaths. The yield of honey from this is small, and not of the exquisite flavour of heather honey.

N. T.—1. *Samples of Wax.*—These appear to be all right. 2. *Bleaching Wax.*—Scrape this into thin flakes, and if ever the sun shines again expose the wax to the full sunlight, spreading the wax out thinly. 3. *Improving Strain.*—We should recommend you to obtain an English-bred Carniolan queen, and allow no drones to be raised except in her hive.

T. C.—*Strong Stocks.*—Your position is the same as the majority of bee-keepers. If the weather should improve your bees would certainly find the limes. If you can spare room for more stocks we should divide, and introduce fertile queens of 1888 at once. You would most likely get some fine section honey if you supered at once, and gave the swarms starters only. *But do not forget to feed* if there is no better weather.

L. W. R.—1. *Variety of Bees.*—Either pure Ligurian or but slightly crossed. 2. *Peculiar Bee.*—Andrena fulva (female). 3. *Fertility of Queen.*—As you have capped worker brood we consider your queen fertile. 4. *Emptiness of Comb.*—Caused by bad weather. 5. *Number of Frames.*—These may remain at present. No more should be added. 6. *Super.*—Yes, let it remain if weather improves now that the limes are in in bloom. 7. *Feeding.*—No feeding necessary if bees can get out, but if wet they must be fed slowly. 8. *Egg.*—An experienced eye will easily detect eggs in the cells. They are white. 9. *Lumpy Matter.*—This is pollen, which appears to have become very dry and hard. We attribute no importance to it.

X. Y. Z.—*Pollen-carrying.*—This is no absolute sign of queen being fertilised or otherwise. Notice the capped brood. If necessary put further questions.

Wood Green.—*Wax.*—Your sample of wax was sent with others to be tested. The reply was that none of the samples were absolutely pure, 'that of "Wood Green" being the best, only two degrees in melting from pure beeswax.' The adverse weather was the cause of the bees not drawing out the foundation.

Herbert.—*Suspicious Comb.*—Foul brood decidedly.

We are informed by Mr. T. Blow that he has been favoured by Mr. F. Andreu with a Minorcan queen, and successfully introduced.

The extent of our report of the Quarterly Meeting of the B. B. K. A. has obliged us to postpone a number of communications.

SHOWS TO COME.

August 1, 2.—Glamorganshire Agricultural Society's Show.

August 6.—Berkshire Show at Clewer.

September 5-7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 1st.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin
Appleton, H. M., 256A Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Burtt, E. J., Stroud Road, Gloucester.
Edey & Son, St. Neots.

THE
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Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

BRITISH AND IRISH STANDARD FRAMES.

We have been asked by a correspondent from Ireland to advise on a few points respecting standard hives and frames. We are informed that the Irish Bee-keepers' Association, in their standard hive, recommend that it should be 9⅛ in. deep, and that the frame be 8½ in. deep, the same as the English standard.

It is much to be regretted that the Irish Association did not adopt the same size frame as the British standard, the depth of which was fixed after considerable thought had been bestowed on the subject. The chief reason for finally settling the depth of the standard frame at 8½ in. was to admit of the hive being made 9 in. deep, this being the depth of the deals (9 in. by 3 in.) imported into this country, so that they could be made with as little waste of material and as cheap as possible. It will be seen that this would give ⅛ an inch under frames, but in practice it is found necessary to reduce the 9 in. board a trifle by planing it smooth, leaving it 8⅞ in. full, so that the space below the frames would be ⅜ in. full. This is sufficient for all purposes, although we should not fear any comb being built under the frames if ¾ in. was left between the bottom of frames and the floor-board.

If the depth of hive is 9⅛ in., it has either to have a thin piece nailed on to make it up, or it has to be cut out of 11-in. stuff, which makes it more expensive on account of the 1¾ in. waste piece left, the wider stuff also being more expensive.

Frames of standard size are 14 inches by 8½ inches *outside* measurement, the top bar being preferably 17 inches long, the thickness of frame may be varied, but the outside dimensions must be the same. We have always considered the frames that have the sides tenoned into the top bars the best, and there ought to be no difficulty in putting them together in a satisfactory manner. A frame-block is necessary, and before the tenons are driven into the mortices, they should have a little glue brushed over them, and before the glue dries, they should be examined to see that the top and bottom bars are true with one another, and tried on a board having two strips of wood nailed at right angles to see if they are square, and if not they must be pushed into shape, and then put away piled one across the other till the next day, when they will be set square and may have a shaving taken off the top to clean off any glue and projections of tenons if any. This is very easily done by a quick lad after a little practice, and makes a very strong frame.

There is no difficulty in getting frames correct in size from our leading hive-makers, and if tried in the manner above described, they will be perfectly rectangular and give the proper space of ⅛ inch between the ends of frames and sides of hive when they would also hang true, if the metal ends, if used, are put on properly. It is most important that frames hang quite parallel and true in the hive, or the combs will be attached to more than one frame. *Lee's dovetailed frames* are made with ⅜ or ½ inch top bars as required, in both cases the outside measure is 8½ inches. The ½ inch top bars are made to work with ordinary ⅜ top bars having the usual pattern metal ends, which raise the frame an ⅛ inch on its supports, which is now generally left ⅛ inch down from the top of the hive.

THE ITALIAN EXHIBITION.

Bee-keepers visiting this otherwise interesting and successful Exhibition will doubtless make it a point not to leave its precincts without first examining what there is in it to be seen in that branch of industry lying nearest to their heart, and they naturally assume that an Italian exhibition without honey could hardly be possible.

Owing, however, to the number of applications for space in almost every branch of the Exhibition having by far exceeded the most sanguine hopes of its promoters and of the London Italian Chamber of Commerce, who took such a conspicuous share in its arrangements, it soon became a matter of imperative necessity to erect special buildings or pavilions, as they are generally called, for the accommodation of Classes 1, 2, and 3. It is in Class 2 (*Farm and Dairy Produce and Preserved Food*) that Apiculture has been grouped.

Unfortunately for these three classes, which represent nevertheless one of the most important branches of Italy's resources, these specially erected pavilions or courts are absolutely severed from the main building, consequently, one of the results most to be regretted is that they are passed unobserved by nearly nine out of ten visitors passing through the turnstiles. Nor is this all, for, with very few exceptions, agricultural exhibits have not only had to accept the lion's share of these unfavourable circumstances, but have had to content themselves with one of the most out-of-the-way, and consequently one of the least-visited corners of the whole Exhibition. A few hints, therefore, how to find it may possibly be acceptable to some of our readers, as they may save time.

Therefore, after having given a glance to what there is to be seen in the main building—where paintings, sculpture, art-furniture, and the like, are displayed in profusion—the visitor ought to make his way across the gardens, by going over one of the bridges, where he soon will be attracted by the unceasing noise of the Alpine Switch-back Railway opposite, or the harmonious sounds of Exhibition or other bands playing almost continuously on the Italian temple on the left. Once here, he will have no difficulty in discovering the buildings where 'Alimentary classes'—as they are advertised about—are laid out for inspection. It may be here added that a bar has been opened within these buildings where almost every item of food and beverage exhibited can be tasted at most moderate charges.

The exhibitors in the classes in which we are most interested are a dozen or thereabout in number, of whom the following are the most conspicuous:—

Giacomo Bertoli, of Varallo-Sesia, northern Italy, awarded diploma of honour. This is undoubtedly the most imposing show of honey to be seen. His exhibits consist of about 150 large tins, containing a kilo, or about 2¼ lbs., of the most delicious honey ever produced. The tins are elegantly got up, and very convenient for export. It may be here explained that Mr. Bartoli's honey is collected at an immense altitude, called Alagna, the highest village on the Italian side of Monte Rosa, where Mr. Bertoli takes his bees in June, when most of the aromatic herbs are in blossom. After this is over, his stocks, about 100 in number, are brought down to a pretty village near Varallo-Sesia, called Civiasco, where they are wintered and attended to by this most intelligent and practical bee-keeper, who makes Alpine nomade apiculture a speciality. His exhibits are in charge of Messrs. Cirio & Co. at the Exhibition.

Domenico Rovagnati, 25 Corso S. Celso, Milan, has a very tastefully got up stand, full of fancy glass bottles and jars in the form of a skep; also a few frames of the Italian standard size and wax-candles. The whole is tastefully arranged, and well deserves the diploma of merit it has received.

Lucio Paglia, a well-known farmer and wine-grower in Castel S. Pietro, Emilia, shows a large number of glass bottles with metal stoppers full of his finest honey. There are also on his stand a large cake of wax, specially made boxes for sending honey by parcel post, and sundry other items relating to apiculture. This exhibitor owns one of the largest model apiaries in Italy, and his queens are favourably known in this country. Mr. Paglia has been awarded an honourable mention, and is also exhibiting in the wine class.

Gajani-Bonaghi & Co., 13 Via Barbiera, Bologna. Besides purified honey and wax, these exhibitors have on show a stocked Italian bee-hive of Sartori's pattern, and a hollow trunk of a tree full of comb. The bees in the hive have, however, all died, not having been liberated on arrival. They have been awarded an honourable mention.

Paolo Rossi, 207 Via Rossi, Sondrio, shows about 100 glass jars with metal stoppers in a pretty stand all to himself, and of attractive appearance. The jury awarded him an honourable mention.

Milesi Ferretti & Co., 63 Via S. Stefano, Bologna, exhibit a large pot of purified honey.

Gaetano Sartorio, 43 Via Polacchi, Palermo (Sicily), makes an attractive show all to himself, in a tastefully arranged stand, in which he also shows preserved oranges, meddlars, and sweet herbs.

Eusebio Pini & Co., of Grossotto (Sondrio), in the Valtellina. This firm have their exhibits in a stand exclusively to their service, of a pyramid shape and full of glass bottles with metal stoppers full of Alpine honey. They also show a few frames of honey-comb, and make altogether a pleasant exhibition.

Cha. Paolo Bensa, 19 Via S. Bernardo, Genoa. In conjunction with honey, this exhibitor shows a considerable quantity of tinned meats.

Enrico Bruni, Macerata (Marche), has a display of purified honey.

Count Guglielmo De la Feld, Castelrovere, Salerno. Purified honey and cheese.

Orazio Orazi, of Servigliano (Marche), exhibits purified honey, honey-comb, and preserves with honey.

Antonio Garulli Pascucci, Recanati, Marche, exhibits honey.

Nicolo Zonghi-Lotti, of Fabriano, Ancona. Honey.

Rocchi Carotti, Chiaravalle, Ancona. Wine, dried fruits and honey.

Besides the above, there are sundry other exhibits connected with apiculture, mostly placed among other farm products generally, and preserves.

USEFUL HINTS.

Weather and Prospects.—The weather does not improve, and affairs now look very serious indeed. We hear on all sides not only of hay rotting in our fields, but of wheat, barley, and oats in little better condition. Wind-storms and pouring rains have 'laid' the crops, and an almost total absence of sunshine, with a very low temperature, prevents the ear from filling, the grain from forming, and mildew has already appeared. Surely in Ovid's words we may deprecatingly exclaim:—

'Aspera Robigo, parcas Cerealibus herbis,
Et tremat in summa læve cacumen humo.
Tu sata sideribus cœli nutrita secundis
Crescere, dum fiant falcibus apta, sinas.'

Grass and corn-crops would seem to have no better fate in store than ensilage, and farmers who devote them to this are probably the wisest of their class. In an equal degree with vegetation do our little sun-worshippers, the bees, suffer. The white clover has failed to secrete nectar, the limes are in bloom, and beginning to fail, and the bees have little or no opportunity of visiting either, if, indeed, it were of any use for them to do so.

Swarms.—Still, in the midst of all this discouragement, swarms have rarely been more abundant. The aim of all skilled apiarists is to obtain colonies overflowing with bees by the arrival of the main honey-flow. When that comes, with bright settled weather, the spreading of the brood-nest is checked by the storage of honey, and a limit is placed on the production of bees, the queen being said to be 'crowded out.' During the present season there has been no honey to check the fertility of the queen. Hence every cell is filled with brood, and the hives, being overcrowded (almost to suffocation) with bees, swarming follows as a necessity. In our own apiary we have instances of the departure of large swarms before even a rudimentary queen-cell had been commenced. Returning swarms to the parent hive, queen-cells having previously been cut out, would seem to be useless, since the swarm, in a few days, reissues. Many of our colonies, overflowing with population, have less honey than they possessed in April, and we are feeding largely both swarms and swarmed colonies. What is to be done? Feed on, say we. 'Double up,' as our American friends would say, *i.e.* unite in the autumn. If we are not greatly mistaken, 'Bees will be bees next spring,' as our factotum sagely remarks. In seasons like the present, when honey fails and the population increases fast, with prolific queens and healthy bees, we have discovered no panacea for prevention of swarming. Nostrums without number have been prescribed: combination hives, unlimited brood-space, doubling, extracting (when there is nothing to extract!), tiering-up, &c., &c.; but experience teaches that all in turn fail. Do those who recommend such methods of prevention ever take into consideration the labour—and hard labour, too—implied thereby in an

apiary of, say, a dozen hives? How much more, then, where four or five dozen are kept! The thing is simply impossible. One cannot be always pulling hives to pieces, removing and replacing section-cases, cutting out queen-cells, only to find new ones substituted. No, time will not suffice, except where two or three hives only are kept, under the system of ceaseless overhauling, and in that case we pity the bees. The best preventive we have found is full ventilation below, and giving of shallow frames below—as well as above—the brood-nest. If this be done before the swarming fever has set in, the bees may be induced to employ themselves (sometimes, but not always) in comb-building in preference to swarming during a cold, wet, and honeyless summer like the present. True, something, perhaps much, depends upon the *race* of bees cultivated. For our own part we have always found the most prolific races the best honey-gatherers and the best swarmers. A prolific queen means a crowded hive. A crowded hive, together with honey-dearth, means swarming.

Feeding, during the present cold and stormy weather can only be discontinued at the risk of losing the colony, whether it be 'stock' or 'swarm.' On this 28th of July we are still writing by our fireside, the rain is downpouring, and the temperature more like that of December than of July. For several days the poor bees have been unable to leave the hives—hives devoid of stores. Our only advice, therefore, must be 'Feed, feed!' Prevent starvation at all events. Feeders are more in demand than sections! The summer of '88 will not, we think, be soon forgotten. Let our watchwords be 'Courage and Endurance.' The merchant, the tradesman, the farmer, all have to suffer in turn. Losses come to all. Why should apiarists alone be exempt? Last season was good, but prices were low. We shall not hear much about 'sixpenny sections'—pleasing alliteration, of which we hope to have heard the last—during the present year of grace. Last year's honey season in America and Canada was about as great a failure as our present one. He who cannot bear adversity, but always expects prosperous seasons, is unworthy of the name of English apiarist. Let us all take courage then, appliance-makers and appliance-buyers, and hope for better times and seasons, putting our shoulders to the wheel and struggling against adversity.

Removal of Supers should take place at once where not already made, and colonies with small population should be enclosed by division-boards, simply contracted to the number of frames they are able to cover. Then feed the bees on syrup. Don't *feed syrup to the bees*. That expression jars unpleasantly on the English ear. Save all the colonies you can—you will get few condemned bees this year—feed up for winter early, that stores may be well sealed over; then 'Trust in Providence, and . . . keep your powder dry.'

Olla Podrida.—Our reminiscences of the Nottingham Show are of a pleasanter kind than those of 'Amateur Expert,' expressed in his letter (1714, p. 344). The number, quality, and ingenuity, of many of the articles and appliances displayed in the Bee Department surpass those of all previous shows. 'Spickness and spanness' of flags, tents, and other externals, are all very well, but the B. B. K. A. will do well to look more to the kernel than the shell. The subject of space for appliance-manufacturers is one entirely for their own consideration, being merely a matter of £ *s. d.* On the first two days of the show the space appeared to us amply sufficient for the display and explanation of the uses of the various articles exhibited in the collections and in other classes; but to provide effectually for the enlightenment of the 88,000 who were present on the fourth day would tax the ingenuity of a far more powerful body than 'our Association.' The B. B. K. A., we feel sure, will be only too happy to pitch the new and spacious bee-tent at Windsor, and to nail the brilliant new colours to the mast-head when these shall have been supplied by the lady friends of 'Amateur Expert.' As regards exhibitors explaining their inventions to the judges, we maintain that the first great principle in *all shows* is, and must continue to be, that the judges shall remain in ignorance of the names of the exhibitors of the articles brought into competition. Competent judges and short-written descriptions of new inventions are all the requisites desirable for obtaining just awards. We have a vivid recollection of the heart-burnings and jealousies engendered on former occasions by the application of the principle advocated by 'Amateur Expert.' Then, again, we are reminded that 'the Royal Show would not be possible but for exhibitors.' A truism, certainly, which we apprehended might be predicated of all shows. We venture to think that self-interest is a powerful motive with many exhibitors at shows of every description. But we are told that 'the bee department did not redound to the credit of the Association,' and 'A. E.' hopes, by these criticisms, 'to induce the *Committee* to endeavour to do better at Windsor.' Truly, kind Mentor; the Committee will, no doubt, feel thankful for such paternal advice, and endeavour to follow it. Meanwhile, we feel assured that its members will feel equally thankful to 'A. E.' if he will use his powerful influence with county associations, and in procuring new members for the parent society, with a view to replenishing the coffers of an Association worthy of the support of all English bee-keepers.

Frame-range.—We by no means turn a deaf ear to the suggestions of Mr. Boyes and 'Woodleigh,' *re* the Right-angled *v.* Parallel systems; but the subject has been so fully discussed of late, that few points, for or against, can have escaped the advocates of one or other of the systems. We advised the raising of hives an inch at the back. Half an inch would, no doubt, effect the objects we had in view, viz., causing the bees to commence their combs at the back (the highest point) and to build vertically and towards the front, and also to render the carrying out of refuse and the free escape of moisture easy. Any danger of throwing foundation out of the perpendicular, and upsetting the 'pull' (of which Mr. Boyes speaks), is avoided by inserting whole sheets of wired-foundation, with the horizontal rows of the cells in accordance with the pitch of the hive. In practice we find this is quite unnecessary with the half-inch pitch, as, practically, combs are built quite straight. To the method of planing floor-boards, recommended on the parallel method, we decidedly object; a smooth, flat board, which can be easily scraped, being a *sine quâ non* with us. We have several hives on the combination and parallel system, but do not like them, especially as regards manipulations and summer and winter qualities; and let us assure 'Woodleigh' that our sentries experience none of the discomforts from shower-baths and dripping roofs which his fertile imagination conjures up.

Sundries.—We have been much pleased, and in several points enlightened, by the perusal of Mr. Hooker's elegant little *brochure, The Guide to Successful Bee-keeping*. It is, like its author, thoroughly practical, and the advice given may be fully relied on by the inexperienced. We have to thank Mr. Griffin for a packet (received a long time since) of his 'Honey Dubbin,'—'Leather Preservative and Waterproof Compound,' which we find a most excellent composition for preserving harness and boots. It ought especially to be patronised by all *bee-keepers*. At the Nottingham Show we were sorry to notice two very *likely* hives, belonging to Mr. J. H. Howard, left out in the cold—not entered in the catalogue, and so disqualified for competition—through the informality of *three* entries having been made in *one line* in the entry form, owing to want of space, and thus escaping notice. Enlarged entry forms will, no doubt, be issued on future occasions.

Selected Query.

[18.] *Do you advise putting the swarm in the place of the old colony, removing the latter to a new position; or putting the swarm in a new position and leaving the old colony alone?*

If the swarm be an early one it will be best on a new stand. If the swarm be a late one it will stand a better chance of providing for itself, and perhaps some surplus if it be placed on the old stand.—E. Ball, *Melton Mowbray.*

There can be no fixed rule in this respect. It may sometimes be good policy to put the swarm in the place of the old stock, as suggested; but there are times when it may be dangerous to the interests of the bee-keeper to do so. If an abnormal swarm is wanted the suggested proceeding will secure it, *i.e.*, the swarm will be rendered abnormally larger by the addition to it of all the bees foraging at the time of the swarms issuing, and of all the drones then on the wing, all of which (drones and workers) would naturally return to the old colony, and might, under certain well-known conditions, be absolutely essential to its well-being. In hot weather great liberty may be exercised in the direction indicated with little, if any, loss; but should the night after swarming be cold very serious mischief might ensue, owing to the sparseness of heat-producers in the hive. Cottage bee-keepers (skeppists, and the like), who usually get their supers filled after the swarms have left, would find the suggested proceeding a disastrous one.—C. N. Abbott.

Much depends upon the time, season, and the thing desired, but as honey production should be the first and last aim of the bee-keeper, I would advise (after using so much of the old home available and necessary for nuclei) to reinstate the swarm in the old position and its spare belongings also. — John H. Howard, *Holme, Peterborough.*

Certainly. Put swarm in place of old colony. — Tom Sells.

No. I always put the swarm in a new position, and leave the old colony alone. My swarms have invariably done well.—Henry Beswick.

If I intended the swarm to be kept as a separate colony from the old stock, I should put it in the place of the old stock as soon as I conveniently could after they had settled, removing the old stock to a new situation: and then in two or three days cutting out all the queen-cells but one, saving any I may require for other hives, &c.—John Walton.

If the swarm issues from a frame-hive that is already supered, I should return the swarm. If from a straw skep I should remove the old hive, and put the new one in same position as the old one occupied. — W. Woodley.

Put the swarm in the place of the old colony as advised in No. 2.—John M. Hooker.

If I desired to obtain surplus honey from the new swarm I would place it in the position previously held by the old colony after having removed the latter to a new position; but if I desired further increase of bees, viz., after swarms from the old colony, I would then put the swarm in a new position and leave the old colony alone.—H. Wood, *Lichfield.*

The hive which is left in old position will of course be most helped by flying (field) bees, and generally speaking I should leave the swarm, and (say) a frame of brood, taking stock to fresh stand after removing what brood appeared to be beyond their protecting power.—John Edey.

I advise putting the swarm in the place of the parent colony in every case, whether for increase or not. Care, however, must be taken that the old queen is at the head of the swarm, which is not always the case, especially in a season like the present, when, owing to bad weather, swarming is often delayed, and when it takes place, young queens often issue with the old one. An expert will know what to do in such case, but to a novice the result might be discouraging. — George Raynor.

BEE-KEEPERS' VOCABULARY;

Or, Glossary of Technical and Scientific Words used in Works upon Bee-keeping.

Apis.—Latin name for the bee; a genus of insects of the order *Hymenoptera* and family *Apidæ.*

The following are given by F. Smith and others as different species of this genus, although some entomologists are inclined to regard some of them as only varieties:—

Apis adamitica.—An extinct bee, the fossils of which have been found in the miocene geological formation of Switzerland. The remains found by Professor Heer of this bee are so like the living species of honey-bee (Apis mellifica) that it can hardly be regarded otherwise than as the ancestor of that species. (See *British Bee Journal*, 1884, vol. xii., p. 95.)

Apis Adansonii.—Senegal.

Apis Caffra.—Africa.

Apis Delessertii.—India (Pondicherry).

Apis dorsata. (Syn. *nigripennis* and *bicolor.*)—India.

Apis fasciata.—Egypt.

Apis florea.—India, Ceylon, China, and Borneo.

Apis Indica.—India and China.

Apis Ligustica.—Italy.

Apis lobata.—India.

Apis mellifica. (Syn., *cerifera, gregaria, domestica.*)—The common honey-bee, domesticated and cultivated. *Hab.* Britain, France, Germany, Albania, Italy, Africa, Sandwich Islands, South America, Jamaica, New Zealand.

Apis nigritarum.—Congo.

Apis Peronii.—India; Isle of Timor.

Apis Perrottetii.—India.

Apis scutellata.—Africa.

Apis socialis.—India (Bengal); Java; Malabar.

Apis unicolor.—Madagascar; Isle of Bourbon.

Apis zonata.—Java.

Apium, Apum.—*Gen. pl.* of Apis, as *Monographia Apum Angliæ*, by W. Kirby.

Apist. *n.*—A bee-keeper, with its corresponding adjective, apistical, incorrect and inelegant. The admissible forms are apiarian and apiarist.

Apistical.—See above. Of, or belonging to bee-keepers.

Apodal. *a.* (*Gr., a*, not, *podes*, feet.)—Without feet; the larvæ of bees are called apodal larvæ; footless.

Apparatus. *n.* (*L.* fr. *apparāre*, to prepare.)—A complete set of instruments and utensils for performing operations in bee-keeping.

Appendicular gland. (*L. appendicula*, a small appendage.)—A branched gland partially surrounding the spermatheca of the queen, and supplying it with a secretion.

Appliances. *n. plur.* (*L. applicāre*, to apply.)—Hives and other articles used in bee-keeping.

Aqueous. *a.* (*L. aqua*, water.)—Watery; partaking of the nature of water; as aqueous vapour in a hive; aqueous honey.

Arachnida. *n. pl.* (*Gr. arachnes*, a spider, *eidos*, form.)—A class of animals which includes spiders and mites. These have no antennæ or wings, have four pairs of legs, and are enemies of bees.

Architecture. *n.* (*L. architectura.*)—Used by ancient writers to designate the comb structures in a bee-hive.

Aroma. *n.* (*Gr. aroma*, spice.)—The quality in honey which constitutes its fragrance derived from plants, and perceived by an agreeable smell or pleasant spicy taste.

Aromatic. *a.* (*Gr.* fr. stem *aromat*—of *aroma*; yielding fragrance)—Applied to plants which yield a spicy smell or fragrance, and impart their flavour to honey.

Arrenotokia. (*Gr. arren*, male, and *tokos*, birth.)—A name applied by Leuckart to indicate that a queen-bee although supplied with spermatozoa, from some cause is unable to fertilise her eggs.

Articulata. *sb. plur.* (*L. articulus*, a joint.)—A division of the animal kingdom in which the bee is found, so called from part of their bodies being composed of segments, articulated or joined together, each segment being formed of one or more rings, and the insects furnished with jointed legs.

Articulated. *p.p.*—Jointed; having joints, as the legs of bees.

JOTTINGS BY 'AMATEUR EXPERT.'

'Mel Sapit Omnia.'

Wanted 'Useful Hints' to know what to do in such a season! Twice I have had a nice lot of new sections two-thirds filled, and twice they have been emptied. They are being filled for the third time, from the limes this time. But will they ever get filled and sealed is the question, so as to be marketable. I removed some of the crates, making them a tier, less in depth; but bees were so cramped for room that they at once 'hung out' on to the floor-board, and so one is puzzled to know what to do. There is small comfort in knowing the season is far from being a good one on the 'other side of the pond;' their hopes are now in 'basswood,' clover having failed.

In talking of the number of bees in a hive, our hard-headed and logical friend, 'Sherborne,' seems to have left out the question of temperature. Bees cannot endure more than 95° Fahr.; consequently, when the temperature of an empty hive standing in the sun would well-nigh reach that limit, very few bees would be required to stay at home in the day time, and the gatherers being at home at night would so increase the temperature that they would distribute themselves over even forty frames, and give one the impression that the hive was well filled with bees. It is when the temperature is low that we soon see the difference, and feel the results also, in the way of hundredweights avoirdupois.

This is the main difference between bee-keeping in England and America. About three weeks after their bees are set out in the open from the winter cellars, we hear of their swarming. At first sight one would ask, 'Where did the increase come from in such a short space of time?' Do their bees hatch two lots of brood to our one?' Of course we know they do not, but a few moments' consideration will tell us that the temperature has made all the difference; their changes are more regular and steady; summer is slow in coming, but when it has come it stays, unlike ours, keeping us in anticipation from the end of February till the middle of June, as it frequently does, tempting us to 'spread brood' and do all sorts of absurd things, because the sun shines and there is a smell of warmth in the air at noonday, followed by ten or a dozen degrees of frost at night.

As outdoor musings have not been practical, and work amongst the bees has fallen off, I have been spending my evenings by the fireside (winter fashion) and have taken to tough reading for recreation, as ladies—feminate and effeminate—take to croquet and lawn tennis. The book is entitled, *A Descriptive and Historical Account of Hydraulic and other Machines for Raising Water*, by Thos. Ewbank. (It was not because we have a drought I chose this subject, but to add to my stock of knowledge.) This particular edition is dated 1851, but the author's preface is dated New York, 1841. At page 276, speaking of the *hydrostatic press*, which, for the sake of the uninitiated I may explain, is similar in principle to what is known as an 'hydraulic jack,' a little tool used for raising heavy weights, the author says:—

'There is a very interesting and beautiful illustration of the principle of Bramah's hydrostatic press in the contrivance by which bees store their honey. The cells, open at one end and closed at the other, are arranged horizontally over each other, and in that position are filled with the liquid treasure. Now, suppose a series of glass tumblers or tubes laid on their sides and piled upon one another in like manner were required to be then filled with water, it certainly would require some reflection to devise a plan by which the operation could be performed, but whatever mode were hit upon, it could not be more ingenious and effective than that adopted by these diminutive engineers. At the further or closed extremity of each cell they fabricate a *moveable piston* of wax, which is fitted air-tight to the sides, and when a bee arrived laden with honey (which is contained in a liquid form in a sack or stomach), she penetrates the piston with her proboscis, and through it injects the honey between the closed end of the cell and the piston, and then stops the aperture with her feet. The piston is therefore pushed forward as the honey accumulates behind it, till at last it reaches the open end of the cell, where it remains, hermetically sealing the vessel and excluding the air. As soon as one cell is thus charged, the industrious owners commenced with another. . . . Without such a contrivance the cell could no more be filled and kept so than a bucket could be with water while lying on one side. Were the organization of bees closely examined, it would doubtless be found that the relative diameter of their proboscis and of the cells, and the area of the pumps in their bodies, are such as are best adapted to the muscular energy which they employ in working the latter.'

A footnote to the above adds:—

'To keep the honey pure and preserve it from evaporation in the high temperature of a hive, the air must be kept from it. Could human ingenuity have devised a more perfect mode of accomplishing the object?'

Well, Mr. Ewbank, it occurs to me that neither human ingenuity nor ignorance could have possibly more perverted the truth however much they tried. I have read most of the 'theories' about bees, but this hydraulic-pump theory of sealing honey, in Yankee language, 'bangs' all.

I was invited to an anti-socialistic meeting the other day and was asked to speak, but I declined knowing little of 'Socialism.' Presently one made a rattling speech in favour of monarchy, impressing on the audience that we should take a pattern from the bees. Having sat the speaker out, I asked, and obtained permission to advise the speaker to let the bees alone as all he had said about them was untrue. He wanted to return to the charge, but the chairman who knew me well advised him 'to let the bees alone,' as he was afraid I was too good an authority. I replied monarchy was all right and good in its way, and I was a stout defender of it, but I could not sit and hear wrong things go out unchallenged about bees. When I do I will cease to be—

AMATEUR EXPERT.

ASSOCIATIONS.

LEICESTERSHIRE BEE-KEEPERS' ASSOCIATION.

This Association held its Seventh Annual Show on July 25th and 26th at Leicester in connexion with, and by aid of, the Leicestershire Agricultural Society. Wednesday, 25th, was a wretchedly wet day, and the show grounds wore a dank and desolate appearance; Thursday was fine and bright, and visitors crowded in from town and country.

In the tent allotted to bee-keeping there was a capital display of hives and appliances, although Messrs. Edey & Son were unable (through a sudden bereavement) to attend there and exhibit wares.

Honey for competition was nearly absent; only 68 lbs. were staged, against nearly 1700 lbs. on the last occasion the show was held at Leicester. Only five exhibits were staged, and some of these—compared with those of former years—were very poor. Fortunately Miss Chester, Rev. M. A. Thomson, and Mr. J. Cooper came to the rescue with some of last year's honey, and so made the table look less like a desert.

The manipulation of bees in the tent lent by the British Bee-keepers' Association attracted more attention than of late years; and Messrs. Munday & Meadows succeeded from time to time in interesting fair audiences.

The Rev. Dr. Bartrum was appointed judge, and Mr. Fosbrooke, jun., of Ravenstone Hall, accompanied him on his rounds.

The hive and bees were drawn for at four o'clock on Thursday in the tent, and under the supervision of Messrs. Day, Carter, Foxon, Meadows, Redshaw, Mr. and Mrs. Ball, and Miss Chester. Mr. J. Cooper, of Halkin House, Belgrave, Leicester, was the winner.

PRIZE LIST.—Class I.—Observatory hive (three exhibits): 1, W. P. Meadows; 2, J. Cooper. Class II.—Super honey, not to exceed 50 lbs. (one exhibit, eight sections): 2, Rev. M. A. Thomson. Class III.—Run honey, not to exceed 50 lbs. (one exhibit): 1, Rev. M. A. Thomson. Class IV.—Twenty-four 1-lb. sections for silver medal: no exhibit. Class V.—Twelve 1-lb. jars of run honey (three exhibits): bronze medal to W. P. Meadows; certificate and *5s.* to J. Cooper. Class VI.—Best hive 10*s.* 6*d.* (three exhibits): 1, Turner & Son; 2, W. Meadows; 3, C. Redshaw. [The hive here awarded third prize took first prize at Nottingham Royal Show.] Class VII.—Best super for comb honey (three exhibits): 1, W. P. Meadows; 2, C. Redshaw; Commended, Turner & Son. Class VIII.—Show case for sections (two exhibits): 1, C. Redshaw; 2, W. P. Meadows. Class IX.—Collections of appliances (two exhibits): Prizes equally divided between W. P. Meadows and C. Redshaw. Special prize of *5s.* awarded to Mr. Lowth of Brant Broughton for section slinger.

WILTS BEE-KEEPERS' ASSOCIATION.

The exhibit of this Association, which was held on Wednesday and Thursday, July 25 and 26, in a field kindly lent by Mr. Bambridge, opened under the most depressing circumstances. A steady rain descended almost without cessation throughout the best part of the day, the consequence being that only a handful of visitors made their way under umbrellas to the tent Mr. H. Burden had been good enough to place at the disposal of the Association. Owing to the wet, all lectures and experiments were out of the question, even if there had been an audience; and the busy bees, which we are told 'improve each shining hour,' in the absence of the sun, were thrown upon their own resources. The tent contained a varied collection of contrivances used in bee-keeping, mostly belonging to the enthusiastic Hon. Sec. to the Association, the Rev. W. E Burkitt, Buttermere. Included amongst these was an 'observatory hive,' showing through the glass sides all the interesting movements of its busy inmates. Killick's wax-extractor was another article worth mentioning, to say nothing of improved skeps, bar-frame hives, and section-boxes. On another table was the exhibit kindly lent by Messrs. Neighbour of Regent Street, who were Highly Commended for their useful bee appliances by the judge, Mr. W. N. Griffin, of Reading (late Secretary of the Devon and Exeter Bee-keepers' Association). There was also a limited display of honey and wax. The Rev. W. E. Burkitt took the prize for section honey, whilst for wax Mr. A. Godding (of Brimslade) was awarded first prize, and the Rev. W. E. Burkitt second. Mrs. Bambridge was Highly Commended. The poorness of the honey and wax exhibit is amply accounted for by the wetness of the season. As an instance of the manner in which bee-keepers have suffered from the weather in common with others, Mr. Young, of Wilton, near Salisbury, last year had over twelve hundredweight of honey, whereas this year he has not twelve pounds.

On Thursday the exhibition enjoyed a better fate as regards weather, for with the exception of a sharp shower in the morning, the day was one of exceptional brilliance and clearness. A good number of visitors dropped in, besides between fifty and sixty members of the College Natural History Society. Among the visitors were the Rev. the Master of Marlborough College and Messrs. H. Leaf, A. S. Eve, F. V. Brughera, A. C. Champneys, and H. Cooper, Mrs. Long and Mrs. Scobell. At intervals throughout the day lectures on the use of various appliances and bee management were delivered by the Rev. W. E. Burkitt, Mr. W. S. Bambridge, Mr. W. N. Griffin, and Mr. A. J. Noyes. Those who visited the show gained much useful information in the very interesting study of bee-keeping.

MIDDLESEX BEE-KEEPERS' ASSOCIATION.

The Second Annual Exhibition by the North-east province of this Association was held on Saturday, the 21st inst., in the beautiful grounds attached to the Wilderness, at Southgate, by the kind permission of P. P. Hasluck, Esq., the Secretary of the Southgate District, the weather being fortunately fine. Unfortunately for the members in this part of the county, the wretched weather has had a most disastrous effect upon the honey yield, and the entries in the classes for honey were few indeed, there being no entries of comb-honey in Class I. Mr. Harveyson, of Finchley, was awarded the first prize in Class II. for twelve 1-lb. bottles of extracted honey. No entries were made in Class III. for the best and largest exhibit of comb and extracted honey, and Classes IV. and V. offered to cottagers for comb and extracted honey. Messrs. Abbott Bros. secured first prize in Class VI. for the best exhibit of hives and appliances, the second prize falling to Mr. S. J. Baldwin, an extra prize was also awarded to Mr. Hutchings; Simmins' Bee Company also exhibited in this class. The first prize was awarded to Mr. S. J. Baldwin in Class VII. for the best hive, price not to exceed 12*s.* complete (unpainted), with ten frames (fitted with starters), two dummies, double walls on two sides, moveable floorboard, porch, contracting entrance, crate of sections, and four quilts. The walls being flush with top bar to admit of storifying if desired. The second prize in this class fell to Messrs. Abbott Bros., an extra prize also being awarded to Messrs. Edey & Son.

Prizes for honey were also offered by the Southgate district to be competed for by their members, the first and third prizes for the best six 1-lb. sections being secured by Mr. Bolton, and the second by Mr. P. P. Hasluck. Mr. Bolton was also awarded the first prize for the best six 1-lb. bottles of extracted honey and the best exhibit of comb and extracted honey.

Mr. Sambels kindly and efficiently acted as judge.

During the day Mr. S. J. Baldwin, who is the expert to the Association, gave several lectures in the tent, in his well-known style, to crowded audiences, and the Band of the King's Royal Rifles gave selections at intervals.

NORTHAMPTONSHIRE BEE-KEEPERS' ASSOCIATION.

The annual show of the above Association was held on the Racecourse at Northampton, on July 19th and 20th, in conjunction with the Northampton Horticultural Society, but owing to the very unfavourable season very little honey was staged. Mr. A. T. Adams, of Crick, and Mr. W. Bazeley, of Northampton, exhibited assortments of hives and appliances showing all the latest improvements, and which were highly commended.

Mr. J. R. Truss, of Ufford Heath, Stamford, attended as lecturer in the bee tent, and explained the advantage of the humane system of bee-keeping to large and attentive audiences, the last lecture of each day including the transferring of a stock of bees from a straw skep to a bar-frame hive.

The following is a list of awards:—*Section Honey*, twelve 1-lb. sections; Charles Cox, Brampton, 1st, Silver Medal, B.B.K.A.; Harry Ringrose, Boughton, 2nd. *Extracted Honey*, twelve 1-lb. bottles; George Smith, Boughton, 1st; Charles Cox, 2nd; O. C. Hollis, Boughton, 3rd, Bronze Medal, B.B.K.A.; Wm. Baldwin, Brampton, 4th. *Super of Honey*, Charles Cox, 1st; Wm. Baldwin, 2nd. *Device or design in honey-comb*, Charles Cox, 1st; Wm. Baldwin, 2nd. *Appliances*, A. T. Adams, Crick, Highly Commended; W. Bazeley, Northampton, Highly Commended. The following gentlemen acted as judges:—Mr. J. Shaw, Moulton Park; Mr. W. L. Bird, Preston Capes; Mr. J. R. Truss, Ufford Heath, Stamford.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

ROYAL SHOW, NOTTINGHAM.

[1732.] Will you allow me space to reply to the remarks of 'Amateur Expert' on the above? He says, 'Were I a lady bee-keeper I would make a new flag.' If Mr. 'A. E.' will kindly send the materials for a new flag to Mr. Huckle, I will undertake to find a lady who will make them up. *Nous verrons.*

'The bee-tent is inadequate.' 'The internal arena (magnificent phrase) is sufficiently large, but the outer circle requires to be larger.' It is thought that circular bee-tents are altogether a mistake; and it is difficult even for 'Mr. Howard's stentorian voice' to be heard behind him in any sized tent, but if the outer circle were to be enlarged it would become quite impossible for half the people either to see or hear. What is wanted is a semicircular tent, an amphitheatre in fact, where gentlemen who do not boast stentorian voices like Mr. Howard might be able to address the whole audience at once; and if 'A. E.' will give a guinea towards it I shall be happy to do the same.

From what I know of the gentlemen who compose the Committee of the B. B. K. A., I am sure they would be only too glad to act upon any workable suggestions; but when Mr. 'A. E.' recommends that 'more opportunities should be given to the appliance-manufacturers,' he is evidently not aware of the difficulties under which the Committee act. The show is not, as he states, 'under the management of the B. B. K. A.,' but very much under the management of the Royal Agricultural Society. If the manufacturers would apply direct to the Secretary of the Royal, as manufacturers of other articles do, they would no doubt obtain as much space in the show-yard as they require. As to the 'hint from the Show at the Colonial,' 'A. E.' possibly does not know that every pound of honey exhibited at Nottingham was sold; and he also, apparently, does not know much about the ways and rules of the Royal, if he imagines that such a form of sale as that conducted at the Hertfordshire Stall at the Colonial on Bank Holiday, or at the Canadian Exhibition, would be for one moment tolerated at the Royal Agricultural Show. Had he not omitted to bring that 'good parcel of flowers from my own garden,' he would have been in a better position to criticise those who did not respond to the request, or who did send the 'poor faded things.'

It is very easy to compare the appearance of honey, hives, &c., at the end of the week, with the spick-and-span newly painted machinery outside; but Mr. 'A. E.' would be doing better service if he would kindly suggest how their freshness can be preserved after they have been handled, from curiosity or for instruction, by thousands of people. I can say from my own observation that the shed was constantly cleaned up, notwithstanding the crowds which were passing to and fro.

As 'A. E.' at all times claims the right of criticising others most freely, I trust he may be able to take my remarks in good part.—ONE WHO WAS THERE.

BEES AND INSECTS IN NATAL.

[1733.] I am very glad to find the Chelifers (Vol. XV. p. 563) have been appreciated. Since you gave me the information about these ugly insects in the *Bee Journal* I have looked repeatedly for them in other places than the hives; in old wood, bark of trees, &c., but have not found any. They seem to come into bee-hives for the winter, and are not to be found, I believe, among bees in summer. All bee-keepers here seem to have found them among swarming bees, and in stocks in the winter and spring. Bees are swarming here now.

I at once avail myself of your permission to write to you on natural history specimens, and should be glad to receive from you information on the specimen of worm which I hope to send you by this mail or the next if I can find means to pack it safely. I had better begin by copying the note of the friend who sent me the specimen. He says:—'You take an interest in natural history, I know. Two days ago a white kitten of ours caught a mantis by the head. I tried to rescue it from her; while doing so, I observed a long hair-like worm escaping from its body behind. It felt stiff and rigid, like a wire. I dropped it into a ewer of water, where it *still lives*. I mean to bottle it to see how long it will live. Body of mantis measured 2½ in., worm 6¾ in. Something of the same kind happened some years ago here with a mantis or a grasshopper caught by a cat. Have you seen such worms?'

The above note was dated May 9th. Having work to do, I could not go and see my friend till the 12th, when the worm was dead. It died, I believe, on the 10th. I was told it seemed quite lively in the water till it was found rolled up in a lump in the water. On being taken out and laid on its finder's hand, it unrolled itself and died.

The mantis insect is found in Natal in many varieties, some of which are imitative insects and very beautiful,

I will try and send you a specimen of one or two of these last: but I fear my having seen this worm will cause me to subject many a mantis in the future to discomfort in the form of abdominal pressure.

Now I want information on another subject. A young friend of mine a year ago noticed a curious thing among his bees. The stock was a weak, queenless one, dying out before the winter. Seeing a bee crawling about in an aimless fashion, he pressed it on the back. It at once deposited a small white grub, one-eighth of an inch or little less, which moved about and seemed uninjured. Under a very inferior magnifying glass it showed something like eyes. He repeated the experiment many times with other bees in the course of a few days, and several times with the same result. Now, I should like to know whether these grubs are from eggs deposited in the bees by insects, as the ichneumon insect at home deposits its eggs in caterpillars?

The *Bee Journal* is well known and appreciated out here. My neighbour, Mr. Scott, is just receiving some hives from your country.

If you receive from time to time entomological specimens by post, initialed 'J. R. W.,' you will know who sends them. I will try and send you a caterpillar that makes itself a neat grass house, and walks about with it, much in the fashion of the caddis at home; only this is found in grass, and, according to both whites and Kafirs, eating this is invariably fatal to cattle. So far as I can find no one has ever found one in the stomach of a dead animal on the part affected, which is always, on *post mortem*, found to be a highly inflamed patch. Perhaps you will be able to find some friend learned in entomology who can say what the perfect insect is, and whether the insignificant little grub really does so much harm to cattle-owners as is believed.

Wednesday.—I am sending in a match-box some insects I obtained from a climber which grows under the tiles of a verandah. There are no leaves on the boughs under the tiles, and these insects lie in large numbers along the rough bark of the boughs.

If you would like a sample of Natal bees, I might post a queen and a few bees to you on your giving me directions. I will try to get a small swarm and keep it. Such swarms, however, usually die in bad spring weather.

If the entomologist at the British Museum wants any Natal insects—an imitative spider, varieties of mantis, the caddis-like caterpillar I spoke of, or the large hollow grasshopper, the abdomen being perfectly empty except for a single thread of gut, and quite transparent; I shall be glad to set my boys to work to collect, and will do the same gladly for you if you wish it.

A friend told me this morning that snakes and bees here live on friendly terms in the same hole, and that there is in such cases a hole in the comb for the snake to use for passage. This is not uncommon, for bees often build in holes in the ground, as do wasps at home. I am promised a view of the next case noticed.

I am afraid I have troubled you with a long letter, but there are so many objects in natural history here that interest one, and concerning which we can get no good information, that I hope you will forgive me.—J. R. WARD, *Richmond, Natal, May 16th.*

[1. *Hair-worm.*—The worm sent is a species not found in this country, but belongs to the family of the *Gordiacea*, or hair-worms, of which the two genera *Gordius* and *Mermis* are British. They are entozoic parasites, reaching maturity in the bodies of various insects—crickets, cockroaches, earwigs, &c.—from which they emerge, especially in wet weather, when ready to deposit their eggs. *Mermis* is frequently found in large numbers after heavy rains in July on the ground and the leaves or stems of plants. These specimens are always mature and filled with ova, and it is supposed that their object is to get washed down by the rains into streams, in the mud of which the ova are subsequently laid. The one forwarded from Natal was hard and dry beyond possibility of relaxation to an extent sufficient to render microscopic preparation of small value, so that the external characters are alone determinable. 2. *Grubs from Bees.*—We have never in our experience met with a similar instance. 3. We shall be pleased to receive the entomological specimens. When the caterpillar comes to hand, we will endeavour to obtain some particulars as to its history. 4. *Natal Coccidæ.*—The insects (nine in number) forwarded from Natal, May 16th, 1888, arrived in good condition, and all alive. The box contained a large quantity of ova which had been deposited *en route*. Those which were not required for dissection or preservation as specimens are still living (July 19), and continuing to lay eggs, which are, when undisturbed, enveloped in a mass of cottony material produced by the insects for this purpose. The insects themselves, whilst belonging to the family of the *Coccidæ*, are of a species not only unknown in this country, but so far as can be ascertained from the best authorities, are a hitherto undescribed species, on which account they have excited considerable interest, and have been subjected to very careful microscopic examination, drawings of their chief features being made for future reference. They will probably form the subject of an illustrated communication to the *Entomological Monthly Magazine* from the pen of Mr. J. W. Douglas, who is at present working up the group of plant-bugs, and who, regarding them as new, proposes to call them *Ortonia Natalensis*. It would be of some further interest to know something as to the earlier history of these insects in respect of their growth and development, habits, food plant, &c. The position in which they are described, as being found 'in large numbers along the rough bark of the leafless boughs of a climber under the tiles of a verandah,' is no doubt well chosen by the mature female insects as affording shelter and protection to the eggs, but is scarcely such as to afford them sustenance during growth. 5. *Natal Queen and Bees.*—Nothing would give us greater pleasure than to receive a queen and bees. We have forwarded a mailing box with instructions. 6. *Natal Insects.*—If you consign to our care any Natal insects, we will see that they are placed in the hands of those who will appreciate the trust, and render an account of them. 7. *Snakes and Bees.*—We shall be pleased to hear further information respecting this curious conjunction, or any information respecting the habits of bees in your locality.—ED.]

THE SECRETION OF WAX—IS IT VOLUNTARY?

[1734.] On page 325 this question was asked: 'Is the secretion of wax a voluntary, or an involuntary, act?' An opinion was given, stating that it was 'voluntary.'

I am fully convinced, from my own observation, that this secretion is involuntary; that the bees have no control over the generating of the secretions; and that it is a natural production, which may be seen on the under-part of the abdomen of the young bees.

It is produced in a singular manner. The construction of the muscular rings around the abdomen is such that they are especially calculated to permit these secretions to ooze out from small holes located under these muscular rings; and when the secretions are dried, they form small white flakes or pellets of wax; when ripe, if not removed, they will drop to the bottom of the hive.

Wax is produced only by such bees as are in a condition to be able to generate these secretions. My impression is that the young bees (while young they are fat, like all the young of both animals and insects) would naturally produce these secretions, and when they are of sufficient age to go to the field to labour (about fifteen

days old), they then soon become lean and poor, and can no longer produce the secretions from which the comb is made; whereas, if they continue to generate these secretions, when crawling over the blossoms to gather nectar, these flakes of wax would be lost, consequently there would be no wax to manufacture into comb. A bee, when lean and poor, cannot generate these secretions.—EDSON GERRY, *Wash. Ter.* (*American Bee Journal.*)

FEEDING BACK EXTRACTED HONEY TO SECURE THE COMPLETION OF UNFINISHED SECTIONS.

[1735.] Ever since engaging in the production of comb-honey, we have been practising the above. We have fed during the past five years at least 13,000 pounds of extracted honey; but our success has been so varied that we have never felt like encouraging the practice. One year, with certain colonies, we would meet with such splendid success as to be greatly encouraged, while the results of the next year, or the performances of certain colonies, would, perhaps, lead us to declare that we were done with 'feeding back.' But, when the next season rolled round, and the close of the linden harvest found us with perhaps 2000 unfinished sections on hand, and we sat down and figured up how much they would be worth if completed, we felt, as Dr. Miller once expressed it at a Chicago Convention, that it might pay to feed to secure the completion of nearly-finished sections, even though the feeding of four or five pounds of honey increase the weight of the sections only one pound. Did we not consider drawn comb of considerable value in getting the bees started in the sections in the spring, we should unhesitatingly pronounce in favour of feeding to secure the completion of unfinished sections. That is, this would be our decision so far as the management of our own apiary is concerned; but it does not follow that this decision would be the proper one at which all bee-keepers should arrive; although it would seem that there is one class that would be glad to so decide, and that is the one that finds the use of drawn comb in sections so very objectionable. So much by way of introduction, and now, for the benefit of those who, for any reason, may wish to practise feeding back, we will tell what we have learned in feeding back the 13,000 pounds of honey. Perhaps the best way will be to tell exactly how we would conduct the operation, but first allow us to say that the feeding of honey, for the purpose of having it stored in sections, is a distinct branch of bee-keeping—as much so as that of rearing queens for the market—and there are many things connected with it that can be learned by experience only, but the following hints may help some:—

As soon as we see that the basswood harvest is drawing to a close, we remove all the sections from the hives, look them over, take out the finished ones, and sort the unfinished ones into three grades—viz., almost finished, half done, and just commenced. The cases containing the first two grades are then placed upon the hives, one case upon a hive, and allowed to remain until the bees have taken possession of them. Then comes the task of selecting the colonies that are to do the work; and, by the way, this is a most important point, as upon a proper selection depends our success. First, the colonies must be strong; next, they must possess young queens, preferably those of the current year, although this is not imperative; at last, but by no means least, we would have the bees Simon pure blacks. Hybrids are the next best, while, as a rule, Italians do very poor work in this line. Keeping in view these points, we select one-half as many colonies as we have cases of unfinished sections upon the hives, and to these colonies we transfer the cases—sections, bees and all—putting two cases upon each hive. We have never experienced the least trouble, in any respect, by thus mixing up the bees; while we secure populous colonies by so doing. If the broodnests are not already contracted, we contract them. The greater the contraction, the more satisfactory will be the results so far as work in the sections is concerned, but if carried too far, it will materially weaken the colonies by curtailing the production of brood. We have frequently contracted the brood-nest to only three Langstroth combs, and these three combs, when we were through feeding, would be three solid sheets of brood; but, all things considered, we prefer to contract the brood-nest to about the capacity of five combs. There is also one other point that must not be neglected, and that is, the brood-combs must not be old and black, otherwise the combs in the sections will become travel-stained unless removed very promptly upon their completion. The newer the combs in the brood-nest the better.

When honey is brought in from the fields it is carried up into the sections—that is, the supply, as regards the sections, comes from below; when a feeder is placed above the sections, then the supply comes from above. In both cases the sections in which the work is the least advanced should be placed nearest to the source of supply. Thus it will be seen that in feeding back we place next to the brood-nest the sections that are almost finished, and above them the grade that are about one-half completed. The feeder used is the Heddon, which is exactly the size of the top of the hive. His new feeder is unexcelled for this purpose, as the bees take down the feed from both sides. This might not seem important, but it is, and for this reason. When the feed is carried down upon one side, the sections upon this side are completed first, while they are finished up very evenly all over the case when the feed is carried down from both sides. The bees seem to be able to handle the honey to better advantage when it is thinned somewhat—say, one quart of water to ten pounds of honey. We heat ten quarts of water over an oil stove until it boils, then mix it with 100 pounds of honey, stir it up well, and it is ready for use. We feed as fast as the bees will take it. We keep close watch of the sections in the lower cases and whenever we find one in which all, or nearly all, of the sections are completed, off it comes, and the case above it is placed next to the hive, and above this case is placed a case of sections brought from the honey-house; one containing sections of the third grade—that is, those in which the bees have made the least progress. We continue to bring in the cases of completed sections as fast as they are finished, replacing them with the unfinished ones from the honey-house. When the stock of the latter is exhausted, we are ready to begin to reduce the number of the colonies upon which we are feeding back, which is done as fast as the sections are completed. During all this time, since the feeding was commenced, we have been watching each colony, and jotting down upon the hive cover its characteristics, and in reducing the number of colonies we, of course, reject those that have worked in the least satisfactory manner. We continue to keep two cases upon each hive, and, as the colonies work with greatly varying rapidity, there is no difficulty, by changing about the cases, to keep next to the brood-nest those sections that are the nearest completion. In gathering the sections together upon fewer hives, we always take bees and all, thus we are continually strengthening the colonies upon which we are feeding back. It is folly to expect the bees to finish up all of the sections upon a hive. Even though the feeding be continued, the sections will not be completed in a satisfactory manner. So long as the feeding is continued the bees act as though they reasoned something like this: 'We must make the cells as deep as possible, and delay the capping until the last moment, in order to make room for all of the honey that we can; and if there are not cells enough we must build more, even though it be in these cramped-up little places between the tiers of cases.'

After the combs are drawn out to full length, filled with honey, and nearly sealed, we have secured better results by giving the bees no food for three or four days, then giving them a little food and omitting the feeding for several days. The bees then behave as though they considered the harvest over and ended. They sealed up most of the cells, and from those that they do not seal they remove the honey. But there is a much better way of managing this part of the business. When the sections are all nearly finished, we put them upon as few hives as possible, placing two cases upon a hive; and then, upon each hive above the two cases of nearly completed sections, we place a case of sections filled with foundation. The bees proceed at once to draw out the foundation and fill it with honey, and this additional storing room appears to bring about a feeling that there is no further necessity for holding open the cells below, and they are sealed forthwith. When the two lower cases are completed, the upper case will, perhaps, be found one-half finished, and these upper cases may be gathered together, bees and all, and placed, two upon each hive, over those colonies that have shown the greatest aptitude for this kind of work, and the feeding continued until the sections are almost completed, when it will again be necessary to place a case of sections containing foundation upon each hive. We have continued this work until at last all the sections were upon one hive, and had the sections all completed except the case last added at the top. After bees have been fed awhile they secrete very large quantities of wax. The little flakes of it can be seen between the scales of the abdomen, and, unless allowed to build comb, the bees will plaster with wax the woodwork of the sections, the inside of the feeders, cases, &c. The moral is, allow them to build comb. Have a row, or two rows, of sections in the upper case filled with starters only; thus there is secured, in the shape of comb, what would otherwise be wasted. Although we cannot control the temperature, it may be well to know that the hotter the weather the more rapid and satisfactory will be the work of the bees when we are 'feeding-back.'—W. Z. Hutchinson (*Bee-keepers' Review*).

PREVENTING SWARMING.

[1736.] Our apiary consists of about 175 colonies, and by means of bottom boards with wire screens and raising up the hives on ¾-inch blocks and the shade boards, we have not had a half-dozen swarms this season, and some of them came from neglect on our part, as it was not possible for us to give them the necessary attention at all times. The boards are set to lean on the south-east corner in the morning, and are moved around towards the south-west during the day. It is only a few moments' work to shift all of them, and we know of nothing so cool or effectual as this large leaning shade board.

An article on this subject, published in the *American Apiculturist*, written by P. H. Elwood, is attracting considerable attention. He makes the unmanageable colonies queenless at the beginning of the honey harvest, taking a few of the brood combs with the queen and forming a nucleus. It seems to us that this plan involves considerable trouble cutting out cells, and then we have always found it quite difficult to requeen very strong colonies. No one can tell what the weather will be at the close of the honey yield, neither can we tell for a certainty that there will be any yield at all. It may be very rainy, so that no surplus is stored at the time it usually comes; in such cases, if the queen is allowed to keep up the brood to the fullest extent, we often get a large honey yield during the fall; while if our colonies should be queenless, and our hives not well filled with honey at the close of the white honey harvest, the apiary would be in an almost hopeless condition. If the honey yield is good the honey stored in the brood combs will contract it all. We think it advisable to have it without any trouble to the apiarist. It is only a few years ago that the leading writers in bee literature were as enthusiastic over extracting the honey from the brood-chamber so that the queen could continue laying to the fullest extent throughout the honey yield and keep up the strength of the colony to the highest point. They argued then that the honey in the brood-combs caused the contraction of the brood and weakened the colony to such an extent that great losses in the winter were the result. From five to ten years ago the natural instinct of the bees caused too much contraction; now, according to the progressive bee-culture, we must cause a greater contraction by manipulating the brood-chamber, removing the queen, &c. We are in doubt whether progressive is the proper adjective to use. It sounds well, yet it seems to have a little tinge of frand in it to a practical mind. We would call it stylish bee-culture; it would convey the real meaning so much better. We can do a great many foolish things for the sake of fashion. The style of bee-keeping is continually changing, yet that the changes are progressive we doubt. We would advise the novice to keep close to shore—follow the natural instincts of the bees. If you contract the brood-chamber, or make your colonies queenless, you are liable to meet with a disaster in your apiary, equal to being shipwrecked with the loss of all the lives on board.—A. G. Hill (*Bee-keepers' Guide*).

'HOOKER'S GUIDE TO SUCCESSFUL BEE-KEEPING.'

[1737.] This little work I have read with a saddened feeling of disappointment. It is professedly a guide to beginners, but falls short of the object—dealing chiefly with descriptions of the hives and appliances of favoured manufacturers; and is more in the nature of a guide to the author's individual prejudices. It is—

> 'Deformed, unfinished, sent before *its* time
> Into this breathing world, scarce half made up,'

and there does not appear within it a single line of reason for its having been brought into existence. There is nothing new in it, and it does not fit into any vacant place or fill any known want, and I fear that it must have been produced in a moment of weakness.—C. N. Abbott, *Southall, July 23.*

BEES IN NEW ZEALAND.

[1738.] I lived for some years in Canterbury, N.Z., and know of only one man, the Hon. John B. A. Acklaud, at Mount Peel, who used bar-frame hives. In our district, Ellesmere, nearly every one has a few stocks in red gin-cases or half cement casks, which produced great quantities of honey, which was largely used with horehound, &c., to make honey-beer. Good strained honey fetched 3*d.* per lb. locally, and 3½*d.* to 4*d.* in Christchurch, where some of the growers filled small casks and shipped (to London, I believe) when their stock had sufficiently accumulated.—M. H. Rohde, *Ranfold, Slinfold, near Horsham, Sussex, July 15th.*

[We are obliged by your kindness in sending the New Zealand paper, and shall in a future number give some extracts from it.—Ed.]

Another Minorcan Queen.—Mr. Simmins, Rottingdean, informs us that he has received a queen from Mr. Andreu, of Minorca, and that he successfully introduced her, and nine other queens, to their respective hives, by his method of 'direct introduction.' There are now in England three Minorcan queens safely introduced by three eminent bee-masters, Messrs. Abbott, Blow, and Simmins. Bee-keepers will therefore in the coming season have an opportunity of comparing the virtues of this new race with those of Carniolans and Ligurians.

Echoes from the Hives.

Waterhouses, Durham, July 26th.—This is the worst year we have had for a long time; old men say they cannot remember such a year. Nothing but starvation in the hives. Instead of getting at least two stones of section honey per hive, it is simply (but expensive) feed! feed! feed! It is almost enough to knock bee-keeping out of our heads altogether. However, the last few days have been very fine for the bees.—JOSHUA FENWICK.

Leesom, Wareham, July 26th.—All my hives are very full of bees, but they make *no honey*. Other people seem to be in nearly the same condition, which is some consolation to one who still looks on himself as —A NOVICE.

Rottingdean, July 27th.—The first *bad* season I remember. However, I have done little feeding here except where stocks have been broken for queen-rearing, but even for that purpose I have never fed in *July* before.—S. SIMMINS.

North Leicestershire, July 28th.—Since the snowfall on the 11th inst. there have been four good and three fair days for the bees, all the rest have been windy, wet, and cold. 'No honey' is the cry in every direction. To-day the maximum temperature has been 52°, and the weather is miserably wet and windy. The bees are again in distress, and the alighting-boards are strewn with mutilated grubs. It may now be safely anticipated that all stocks will require copious feeding to carry them through the winter. Indeed this season is worse than that of '79.—E. B.

Evesham, July 28th.—We have had the worst season that it has ever been my lot to chronicle. Rain, rain, nothing but rain! An almost complete absence of sun and warm weather. Skies black with clouds. The fertile vale extending from Malvern to the Cotswolds enveloped in mist and moisture, and the meadows flooded in tracts of the Avon Valley. The bees have consequently been able to gather no honey. No one has any sections or any honey to extract in any quantity. My own bees are not in a more prosperous state than any of my neighbours. They have hardly been able to get their daily bread, so to speak. I have been obliged to feed them regularly for the past four weeks to keep them from starvation. I have had no swarms myself, and I have heard of many dying from want of food or lack of feeding. Let us hope a better state of things is in store for all persevering bee-keepers another season.—A. H. MARTIN.

South Cornwall, July 28th.—I suppose that never was the heading of this column more justified than in the present season. Almost every note is the same. 'No honey,' 'Bees starving,' and the like. There have been just two instances in which something has been stored. In these parts the state of things is sad. I had to feed on Midsummer-day, and have done so at intervals since, and I do not think my stocks have an average store of one ounce apiece. How they live is a wonder, for I cannot feed them all, if only that I cannot give the time to it. It was not an entire misfortune that one stock died out in the winter leaving ample stores. These come very useful now. I put in a frame to-day with, perhaps, a pound and a half of honey in it. What a a treat it clearly was! Clover seemed to have died out last year: its very roots destroyed. The roadsides which in these parts used to be covered with white dutch have had scarcely a leaf of it this year, and *Trifolium nanus* (query *procumbens*) has taken its place. At the present time, to my surprise, a little white dutch is showing itself, and there is a late crop in some pastures, so that IF (a very large IF) we have a fortnight's sun our bees will just survive. I do not care to contemplate the state of things if we have more rain. To-day is bright, with a gale which I hope may blow the unsettled weather away. Someone has asked if carbolic mixture is apt to lose its power. I think it will. The smell remains, but after two or three weeks the power which affects the bees has departed. At any rate, dry your cloth before using again. A neighbour the other day found sixty-two dead queen-wasps on an old alighting-board, disused, but in place. It was very curious.—C. R. S.

North Notts, July 30th.—I have been thinking for some time that I would send you an Echo, but hoped it would be a better one than this. Up to the present date I have only taken nineteen moderate 1-lb. sections from my eight hives; last year at this time I had taken 475 lbs. of section and extracted honey, as I work four of my hives for sections and four for extracted, so that you will see that we are no better off here than in other parts. But all my hives are crowded with bees and brood from top bar to bottom bar, but when I examined them a week ago, I do not think there would be an average of 2 lbs. of honey per hive, although I have been feeding all through this month; but as I only give sufficient syrup to last them from day to day, they are unable to store any. All hopes of any further surplus honey in this district are now at an end, but the lime-trees show an abundance of bloom, so that if we could only get a fortnight of fine weather for the bees to take advantage of them, it would be very satisfactory to all of us, as I am only a working man, and consequently find a considerable difference in being able to sell from 17*l.* to 20*l.* worth of honey to having to purchase 2 cwt. of sugar for feeding purposes. It has been rain! rain! rain! and on Saturday last (28th) there was half-inch rain registered, and the same person told me that the total for the month was four inches and two parts (2-100ths), and that it was the largest total for July for over twenty years past. On the 27th I drove two skeps for a friend, united the bees, and transferred them and brood into a bar-frame hive; but, although I have driven hundreds of skeps, I never saw so many bees in two skeps before, but only 4 or 5 lbs. of honey, which evidently were remains of last year's stores. Natural swarms about here, even from skeps, have been few and far between, and I hear of a few having died of starvation already; and it is almost impossible to make skeppists believe that bees require feeding in June and July.—LOCAL HON SECRETARY *Notts Bee-keepers' Association.*

School House, St. Margaret's, Stratton, Swindon, July 30th.—Rain! Rain! Rain! Nothing *but* rain! No honey. Oh, no! Not a toothful for one's own use. On May 24th I fetched my twelve stocks a distance of 150 miles, with three journeys by road, without damaging a single comb. They did well until June 10th, when I doubled four and supered three, and they have decreased in weight ever since. They have unwillingly on my part increased five, now numbering seventeen. Last Monday week I had a swarm of Ligurians, which could barely get into a ten-framed hive, and have now started queen-cells. One swarm, with hive and nine combs, I sold for 27*s.* 6*d.* Am now feeding up and getting ready for winter. Since reading 'X-Tractor's' effusion on 'Ye Hyves,' and while watching the *refreshing* rain, have had the following in my head. The last line is a great consoler:—

Oh! where do they come from?
Those little drops of rain,
Pitter-patter, pitter-patter,
Down the window-pane.
The sections all are M.T.
And *our* labour's all in vain.
But should a June come round next year (?)
Then try, try, again.—COLTRIP GILBERT.

NOTICES TO CORRESPONDENTS & INQUIRERS.

L. W. R.—1. *Italians.*—Your bees may have a slight touch of other blood in them, but even in an absolutely pure colony there are considerable variations as to

markings. For quiet, good working bees, we would strongly recommend Carniolans. We recently unpacked three strong lots that had travelled a considerable distance by rail, &c., and placed them in their hives without either smoke, carbolic cloth, or any one being stung, although several ladies were within three feet of the hives. 2. *Drones.*—This must be the case while there is drone-comb in the brood-nest, except in case of a rapid honey glut, when these cells would be utilised for honey. Move this comb to the outside of the nest, so that no further breeding may take place in it. Guard against chilling the worker-brood. The drones may be killed by the thrust of a needle. They are of no use now. 3. *Stimulating.*—Should the weather not improve, feed regularly to induce a continuance of breeding until second week in August, then gradually increase feeding for a week, and, finally, in last week of August give 30 lbs. of syrup as fast as they will take it.

F. A. B.—*Dead Bees.*—Evidently a case of starvation.

Downhearted.—*Suspicious Comb.*—Not foul-brood. Foul-brood smells very rank.

J. Gibson.—We should say you have either an injured queen or a fertile worker in the hive referred to, and would recommend you to repeat the operation and give a fertile queen to the hive.

W. S. Hicks.—*Drone Brood cast out.*—The bees sent are drones taken out of the cells and cast out. Your hive has given up all intention of swarming again, and having a fertile queen has no longer need of drones. These have been driven out and what drones have remained in the hive have been cast out. We are pleased to hear you have found our *Guide Book* so useful.

T. Marsh.—*Honey.*—We cannot detect any flavour (the true flavour) of heather in this sample. We should say it was new honey, of very good quality, gathered from fruit blossoms, clover, &c.

O.—*Queenless Colony.*—Your colony is queenless, and very likely will accept the queen-cell, although such a colony will often tear one down when given them. A good plan is to put the cell into a cell-protector. When the virgin queen comes forth she will be instantly accepted, or perhaps we might say not taken any notice of until she is fertilised, and becomes the mother of the hive.

H. Stuart.—*Dividing Swarm.*—Allow them to fill out ten frames, but do not divide so late in the season as this. When the ten frames are drawn out and stored pack them for winter. The bees sent are ordinary English blacks.

Joshua Fenwick.—1. *Missing Queen.*—The first queen died no doubt from natural causes. We should judge her to be of little use as she presided over so small a colony. 2. *Queen Rearing.*—Bees can raise a queen from brood inserted into a hive, but where a colony is weak and deficient of young bees (nurses), the queens so reared are of little use. 3. *Drones.*—It is not necessary that drones should be in a hive in which the queen was reared, yet it is difficult to keep them out as drones are common to all hives in an apiary.

A Novice.—*Bees in Roof of Hive.*—Your hive must be in fault or the quilt not properly put on. It is impossible for the bees to get into the roof if all parts of the hive fit correctly, and the quilts are properly adjusted. These bees having got into the unoccupied portion of the hive have been unable to find their way back again; you did quite right in replacing them in the hive. The condition of your bees is not different to most bee-keepers this season. If we experience fine weather during August honey will be obtained sufficient for winter stores, if not they will have to be fed. Keep feeder full on swarm.

J. T. D.—*Bulging Comb.*—1. Remove the offending portion of comb with a knife, it is only on the top of the comb. Do not on any account increase the space between ends or you will make matters worse. 2. *Stock in Skep.*—A swarm always works more vigorously than a stock. Wait until we have finer weather they will then work better.

M. Lin Shenfield.—*Bees short of Food.*—They should now be fed with syrup. Have you tried the frame-feeders for syrup? They do not require the syrup to be boiled, and so save a lot of mess.

B. L. Richardson.—See above. Give them about four to five pounds for the period named.

M. Humphrey.—*Excessive Swarming.*—The exceptional weather has caused the bees to swarm unnaturally because *when* the sun shines, the temperature rises so rapidly that they vacate in order to get cool. Various localities have different names for casts. We have heard of the name 'smart' before.

W. L. Bird.—*Third-class Certificate.*—To obtain this, it is requisite that you prove to the judge that you have a practical knowledge of the management of bees. The examinations are generally arranged by the secretaries of county associations, but should there be any difficulty as to this, apply to Mr. Huckle, Secretary of the B.B.K.A., Kings Langley, Herts.

Langstroth Fund.—Received, with thanks, 10*s.* from Mr. H. R. Roberts, Kimberley, South Africa

SHOWS TO COME.

August 6.—Berkshire Show at Clewer.

September 5–7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 1st.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Appleton, H. M., 256A Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley & Flood, 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Benton, F., Laibach, Carniola, Austria.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Simmins, S., Rottingdean, near Brighton.

THE
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Editorial, Notices, &c.

PRACTICAL WORK IN THE APIARY.

NUCLEUS SWARMING.

We have just been asked several questions by a correspondent respecting nucleus swarming, with the wish expressed that we would go into the details of the process in the *Journal*. Our correspondent says he has carried out the practice as described in our *Guide Book* with the greatest success, and is surprised that from its simplicity it has not superseded all other ways of making artificial swarms. We quite agree with him, and think that for several reasons nucleus swarming is by far the best of any. The principal reason for our saying so is, that there are no queenless parts, for the stock from which we take our swarm and the swarm are each provided with a laying queen. As the old stock does not have the queen removed from it, she goes on laying eager to replace the bees taken away, especially if the swarming has been done, as all artificial swarming should be done, if possible, only in fine weather. The reason for this is very clear. We want a large number of bees out on the wing, as these are to furnish the new population; and if the weather be not fine and the sky is overcast, the bees will not be out in large numbers. When the stock hive is removed to a new stand, the flying bees will return to the old stand on which our hive which is to receive the swarm stands. If only a few of the bees able to fly return, there may not be enough to form the swarm, although for days afterwards if the weather continue cloudy, bees from the old hive will be joining it.

As far as regards the old stock, this will make very little difference, because it will have been removed full of young bees and with combs full of hatching brood, which rapidly more than make up for the numbers of bees taken away. The swarm, however, suffers most because after it is established, any bees not belonging to it are looked upon and treated as strangers. If they carry in stores, all well and good, they are allowed to go in; but should they come without anything, as would most likely be the case in unfavourable weather, they are looked upon and treated as enemies. Then, also, when we cage the queen in the new hive, we run a greater risk of losing her if stranger bees are coming in when she is released. We therefore, from past experience, do not advise making artificial swarms by any of the methods described except in fine weather.

In showery weather, if a swarm has to be made, there is no better way than by the nucleus method. Of course, our experience has taught us to look upon this method as the best in any weather, and we therefore practise it in preference to any other. In nucleus swarming the hive to contain the swarm has already a queen and young bees, who are there ready to protect her from the attacks of any strangers. We believe in young queens, and attribute our success to the fact that we never allowed an old queen in our apiary. Therefore, we always have a number of nuclei with young queens in them. If only young queens were used, bred from selected mothers, we should not hear of any doubts being expressed about a queen keeping a hive of forty standard frames properly populated. These nuclei are always ready for any emergency, and I can supply a queen, either to replace one that has been lost by accident or otherwise, or to make swarms. In nucleus swarming the queen is matured and fertilised before the final swarming is performed, and there being no queenless parts, the labour of the hive is carried on with vigour and rapidity only seen in hives having young queens.

To make a swarm we proceed in the following way:—Examine one of the nucleus hives in which a queen has been reared and if she has commenced laying eggs it is in just the right condition for our purpose. We always cage our queen, not because we have always done so, but because we find it the only way to be certain of success. We then remove the division-boards and fill up the hive with frames of empty comb or comb foundation. Then remove a strong stock to the place occupied by the nucleus and put this on the stand where the stock stood. In this way the bees from the old stock, as they return to their former stand enter the nucleus, while the few bees from the nucleus, and the young bees remaining in the old stock, will take care of the brood until they are increased in number by the rapidly hatching bees. The nucleus already contains some young bees who will look after the queen.

If the weather should become unfavourable, and there appears to be a deficiency in bees, we can easily strengthen our nucleus by inserting frames of capped brood taken out of the parent or any other hive. After thirty-six hours' caging the queen may be released, but if she is not caged we may run the risk of losing her, an experience which we have paid for. If the nights are cold the swarm should be allowed only as many frames as it can crowd, the space being contracted by the division-boards. It must be borne in mind that such a swarm has a mature queen, and with combs for her to lay in the swarm will soon become a stock. A fortnight, at least, is saved by giving a laying queen, and that is an advantage which no bee-keeper should overlook.

The remarks of Mr. Quinby, with regard to this, will strengthen our position. He says: 'The introduction of a mature, fertile queen to a colony two weeks sooner than when they swarm naturally, is an advantage sufficient to pay for extra trouble. The time gained in breeding is equivalent to a swarm.' Therefore the prudent bee-keeper will try never to have a stock or a swarm without a laying queen.

BUNCEFIELD APIARY.

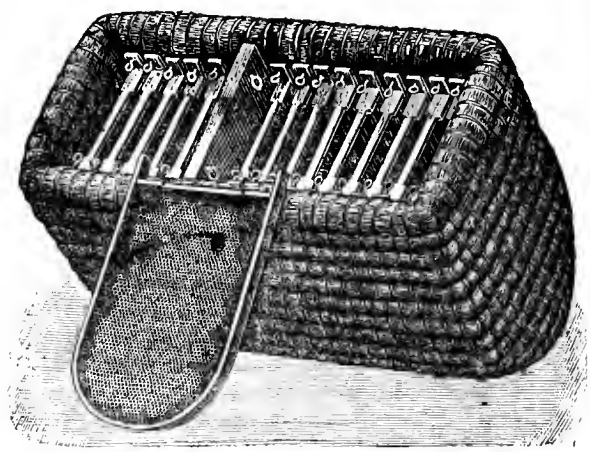
For full two generations the house of G. Neighbour & Sons has been closely identified with the supply of whatever is most advanced and useful amongst appliances for bee-keepers, not allowing itself to be surpassed in enterprise and good workmanship, combined with as much cheapness as can be got with efficiency. It was only to be expected, therefore, that their completeness would be extended to their bee-farm; and it was with considerable pleasure that we sought for, and obtained, an invitation to visit the apiary at Buncefield, near Hemel Hemsted.

No worse time could well be selected for a visit to a bee-garden than during such a continuous daily downpour of rain as we have had recently, and it was with some trepidation (and croaking) that we stepped into a conveyance at Boxmoor, after a twenty-mile ride from Euston to Hemel Hemsted, with prophets of evil weather on either hand. A steady rise of some 300 feet over about six miles, through the usual beautiful lanes of Hertfordshire, in which one might seek in vain for unpicturesque scenery, and we were at Buncefield. With what eager and almost envious eyes did we note divers ten-acre fields covered with white-clover bloom, asking, as plainly as plants can ask, for sunshine to bring the bees to visit them! With what sullen discontent do we try to bring our minds into a fitting frame to 'bless whatever is!' *Par parenthèse*, one thing we must all learn this year is to 'extract' comfort from *comparative* misfortune, and thank our stars, somewhat pharisaically, that we are not as other men, whose all lay in the fields perishing for want of warm weather.

To anyone who desires to see a perfectly planned apiary, managed by a past-master in the craft, I commend Buncefield. Three acres (four goats in place of *la vache*) are divided into orchard and bee-garden, the latter again subdivided by pathways of closely cut velvety-green turf into sixteen squares, ten to twelve yards in extent on each side. Each of these squares, on the north side, is occupied by a line of hives, fronted by a cindered alighting-ground; each square is fitted with a distinct thick mass of bee plants:—Arabis, Borage, Crocus, Limnanthes, Echinops, Nepeta, and so on. These in turn are fringed with raspberry-canes, beyond which is a continuous line (all round the square) of the brilliant blue spikes of *Veronica rupestris*, evidently much loved by bees. The great novelty, however, was the pleasure afforded by noiselessly moving about on the smooth grass walks. Upwards of seventy hives are kept in this garden, perhaps as interesting and heterogeneous a collection as can be found in the kingdom. Mr. Neighbour may some day arrange them in some sort of chronological order, so that they may give us an *al-fresco* history of apiculture; in fact an illustration of the evolution of the hive from the embryonic skep, through the supered skep, up to the bar-frame hive of to-day; and from the natural honeycomb to some fanciful future Koerbs' comb, drawn out into abnormally long and narrow cells, whose bases shall be sliced off, instead of the caps, and in which the bee of the future shall continue to store honey, wondering where it all runs to as it extracts itself into the honey vat, down cells only wide enough to admit the bee's head.

At one corner is the greatest treasure we have yet seen amongst hives—an original Langstroth, presented to Mr. Neighbour by the venerable father himself two-and-twenty years ago. Then, dotted about with as much regularity as possible, are various 'friend' Root's chaff-hives; and in all good part we may say that had he been with us he would have been considerably chaffed about these as seen in comparison with the appearance of the modern hive. Even this we seek to-day to make as unlike a dog-kennel as possible, a vain effort. Ponderous structures these chaff-hives are, evidently built where wood is cheap, and built with the intention that the hive 'comes to stay.'

We were shown some twin hives (used as one) containing twenty-two frames, with a view to extracting. These gave one an idea of 'ice-safes,' but are most useful bee-houses, economising heat when used as twins, and allowing easy uniting when run for extracted honey, or offering facilities for artificial swarming by lifting back the frame containing the queen, and turning the hive round; the roof is hinged on like the lid of a corn-bin, and can be similarly propped up to facilitate manipulation. We next come to several immense straw hives, of the pattern advocated by the celebrated Gravenhorst; these are called 'Bogenstulpers,' and are the best made hives of straw yet seen. They look likely to last a lifetime, and are about three feet long, two feet high, and a foot broad. Strange as it may seem, the top bar of



A Bogenstulper.

the frames is the bottom bar; that is, when the hive is inverted for manipulation we see a row of wooden bars fastened to the straw sides by a stout wire pin or peg; to this bar is fixed a piece of wood bent to form a frame, fitting only close enough to the inside of the hive to allow a free passage-way round it. The foundation is fixed in a slit at the top, or bent portion of the frame, and is worked out and added to by the bees in the usual way. When manipulated a little smoke is blown under the back, the hive being tilted up for the purpose, the bees rush up to gorge, the hive is quietly rolled over, backward way, into a sort of cradle-like wooden stand, pegs are removed, a frame withdrawn, bees brushed off, and extracting proceeded with. The entrances are three in number in the front side of the hive, not on the floor-board.

After a visit to the adjoining orchard, we were next invited to inspect the manufacture of comb-foundation; this was deftly done by a man and boy at a rapid rate, the quality of the wax being specially noteworthy; it was almost tasteless, and was only slightly charged with the inevitable pollen-grains. Mr. Neighbour is fortunate in having a manager at Buncefield whose heart is so thoroughly in his work. Mr. W. Marshall is exceedingly enthusiastic; he introduced us to a most ingenious and rapid method of fixing foundation in supers. We don't wish to tell secrets or would explain it; he may do so perhaps.

Then comes the parting, the ride homewards, this time behind a steed from the Steppes of Tartary. Whether bee-men prefer foreign blood in their *hives* is a moot point, but this we know, they like it in their *shafts* ('A. E.' to wit). This reminds us we were to have the pleasure of 'Amateur Expert's' society on this occasion, but he was judging somewhere. We did see one sight calculated to rouse all the covetousness in our nature. This was an immense field of white clover in which were dotted about some scores of pheasant coops, the

clover (here's the rub) being *left in bloom* for the sake of the young birds.

A few days after this visit we called to see a three-frame observatory hive of Carniolans at work at Mr. Neighbour's shop in Regent Street. There they were, proverbially busy, during very indifferent weather, hauling in loads of pollen and honey from goodness knows where —pollen red, orange, yellow, green, and grey. Regent's Park and the Green Park were the nearest feeding grounds. The hive was on the first storey, therefore the bees incommoded no one, nor were they incommoded, for to judge from their movements they were far busier, and more intent on their work, than the human bees in the street below,—any way more than—X-Tractor.

IRISH EXHIBITION.

In visiting recently the Irish Exhibition at the Olympia, Addison Road, we were pleased to find that the Irish Bee-keepers' Association had had the enterprise to present to the public so large and varied an assortment of the appliances required by bee-keepers in the present day, together with divers bottles and sections of pure Irish honey. The collection of appliances was chiefly from the Irish branch of Abbott Bros., of Merchants Quay, Dublin. Amongst the hives were to be seen the Economic, the Jubilee, the Irish Combination, the Universal Doubling, the Irish Association, and sundry others, with all kinds of supers and sections, extractors and crates, comb foundation for stock hives and supers, honey bottles, &c. In fact the collection was remarkably complete and well selected.

At no great distance from the exhibit of the Irish B.K.A. was to be seen a case exhibited by the Honey and Wax Company, Columbia Market, containing samples of the honey products, edibles, and beverages, tablets and honey drops, &c., generally associated with the name of Mr. Moyle. Looking more closely we discovered medals which had from time to time been awarded to Mr. Moyle from various bee-keepers' associations. We presume, therefore, that there must exist some connexion between the new Honey and Wax Company and Mr. Moyle—a conjunction which we confess we were unprepared to see. From the presence of the case in the Irish Exhibition we consider that we may deduce that the new Company are desirous of largely using in the future the products of Irish bee-keepers.

LANCASHIRE AND CHESHIRE ASSOCIATION.

We beg to call attention to the date of closing of entries (15th inst.) for the exhibition to be held at Lancaster. The amount offered in prizes is calculated to secure exhibitors a good return for their entries.

NATIONAL CO-OPERATIVE EXHIBITION AT THE CRYSTAL PALACE.

Exhibitors are reminded that entries for this exhibition close on the 11th inst., *Saturday next*. The prizes offered for honey are on a liberal scale. Secretary, Mr. Wm. Broomhall, 1 Norfolk Street, Strand.

SHROPSHIRE BEE-KEEPERS' ASSOCIATION.

We desire to direct the attention of bee-keepers to the annual exhibition of the above Association which will be held in conjunction with the Floral Fête of the Horticultural Society at Shrewsbury on the 22nd and 23rd of August. The prizes will be on a most liberal scale; and free instruction and lectures in bee-keeping will be given on the occasion. We trust that the exhibition will prove a great success.

THE WEATHER.

While we have been experiencing such cold and ungenial summer weather, the heat in Norway this summer has been intense, the temperature exceeding anything registered during this century. At Christiania the thermometer has several times registered 86° to 89½° Fahrenheit in the shade. At Nyborg in the Varanger Fjord it has been up to 95°.

GLEANINGS.

The following query is taken from the *Bee-keeper's Guide* and will show the opinions of some of the leading American bee-keepers respecting the suppression of brood-rearing.—Ed. *B.B.J.*

Suppressing Brood Rearing.—*Is it practicable and profitable to suppress brood-rearing to avoid 'useless consumers' between the early and fall honey harvest?*

No. Encourage it, if anything. 'Keep your stocks strong.'—W. M. Barnum.

It is practicable by removing empty combs and putting in their places combs full of honey, or dummies, but it is not profitable.—M. Mahin.

I do not think it is. Nature works in harmony with itself. If the honey crop was all we had to consider, there would be no trouble, but we have several other factors in the problem. We must have bees as well as honey in order to winter safely. I am an advocate of strong colonies at all times, and any suppression of brood-rearing unless in the hands of a practical expert will surely work great harm.—J. E. Pond.

No; for the time between the two crops is not long usually to make this advisable.—Dadant & Son.

If practicable, hardly profitable.—G. W. Neihardt.

My experiments in this direction have not been satisfactory. It looks very feasible that some plan that will prevent excessive increase after it is too late for the increase to aid in gathering the early harvest might be resorted to with sure profit. How often we have been told that all such increase became 'useless consumers,' &c. The *theory* is very inviting to any one to try the experiment, but when a practical test is made of the theory it don't 'pan out.' My best colonies are always those that have not been tinkered with. My colonies which have plenty of stores to winter on, and come out strong in the spring and work with a vim and courage that bring success, are the colonies that have been allowed full swing at breeding.—G. W. Demaree.

I have never given much thought to the 'practical' part of this subject, but I have had queens that kept on laying after the early harvest, and the late harvest failing, until they had consumed what they should have saved for their winter stores. I believe it would be profitable to have less brood-rearing during certain parts of the season.—H. D. Stewart.

In some localities it might be so and in some it might not. I find that the bees attend to that matter themselves in this country.—J. S. Harry.

I have never seen the time when I wanted to prevent brood-rearing; on the contrary, it has been my aim to keep up the strength of stocks so as to have bees to get honey when it does come. It is practicable, but not profitable. The queen can be caged, the heads of capped brood shaved off as we do drone brood, but none of this for me if you please. I would rather feed a little and keep the queens at work.—W. M. Kellogg.

J. S. Cumming says in *Gleanings* with respect to foul brood that he is sure that the germs are contained in the

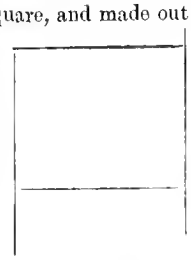
honey, and he bases his assertion on the following:—He had some colonies infected with foul brood and determined to experiment. He collected about two grains of the droppings of some of the bees from the diseased hives, put them in syrup, and fed it to a healthy colony that he had purchased, and left ten miles from his own bees. The bees from the colony so fed were not allowed to fly, except under cover when there was no means for them to escape. In just thirteen days the brood began to show unmistakable signs of foul brood, and in four weeks the colony was in a very bad condition of foul brood. They were only fed about half pint of infected syrup.

The *Canadian Bee Journal* says:—From all experiments that we have tried, and we have used foundation that has been one, and in some cases two years old, by putting it in a dry, airy place and keeping it as little as exposed to the air as possible it will answer the purpose just as well as new foundation. Of course before being given to the bees it requires to be warmed up slightly; they will then work it out with more satisfaction than if given to them cold and brittle. It can be warmed very easily by putting it in fairly warm water for a few minutes. The water should not be over 95 to 100 degrees.

The *Canadian Honey Producer* says:—Bee-keeping at the present day requires to be conducted with care and economy, the margin of profit one year with another is not so great that we can dispense with the qualities which are necessary to succeed in any other business.

The *American Bee Journal* says:—There are many who should never attempt to keep bees—the shiftless, the lazy, those who will not read and study the necessities of the business, those who are afraid of stings, those who are nervous and irritable, and those who have no time to attend to the care of the bees. All such should never attempt to keep bees. Failures come in every avocation. Of no occupation can it be said that it never fails. Bee-keeping is no exception to the general rule—but it is not more liable to failure than others. The manufacturer, the banker, and the merchant, often have to grapple with financial distress and commercial panics—but, do they forsake the counter, the desk, and the factory, and look for some other business wherein loss and trouble never come? No! indeed, such reverses but stimulate progressive men to further diligence and more dauntless courage! When the bankers, merchants, and farmers set the example, it will be time enough for apiarists to become discouraged and give up the business—but not till then!

When there is nothing to protect the hives from the heat of the sun, the *Bee-keeper's Guide* recommends shade boards two and a half feet square, and made out of ⅜-inch stuff. The boards are nailed to two upright pieces two inches by one, and project below, so as to form feet for the board to rest on when it is leaning up against the hive on the sunny side. This has been found by Mr. Hill a satisfactory way to induce bees to work in their boxes in the dusk of the day, and it also prevents sagging and falling of comb foundation.



The facility with which foul brood may be spread will be understood when we point out to our readers that the *Revue International* mentions an instance of a dealer in Carniolan bees sending to a subscriber one dozen colonies, nearly half of which had foul brood.

In the *Bienenzeitung* (*Nördlingen*) Karl Schröter describes his experiments with foul brood, and his discovering that a mixture of carbolic acid and wood tar was the quickest, simplest, and best remedy. It is not given in the food, but is applied in such a way that there is a constant evaporation of the mixture, and an effusion of the vapour in the hive. In order to facilitate the process the worst of the foul-broody combs were removed, although this is not absolutely necessary. The vapour of carbolic acid, like that of salicylic acid, kills the spores and dries up the rotten and diseased contents of the cells. Care must be taken that the bees do not touch the acid or the tar. He, therefore, prepares two pieces of thin board about four inches square, perforated, with a few holes. Strips placed round the lower one, will form it into a shallow box which can receive pieces of felt to fill it. Equal quantities of carbolic acid and wood tar are mixed and the felt saturated in the mixture, placed in the box, the lid put on and the whole then placed in the hive Cigar-boxes are just right for making the cases for the felt. All the work is now ended, as the dose will generally be sufficient for the whole summer, although it is better to repeat the dose every three months. Should foul brood reappear in some of the cells the second season, commence the treatment and continue until cured. The bees do not object to the treatment and continue their work as usual.

Selected Query.

[19.] *After a colony has swarmed would you supply it with a laying queen or leave the bees to rear their own queen in the natural way?—State your reasons.*

A very bad plan to give a queen under the circumstances named if the honey harvest is near or in progress, for she will lay in every available cell, and the bees will be engaged rearing young instead of laying by stores. In the other case after about eight days, the bees will be able to devote their whole energies to honey-gathering.—E. Ball, *Melton Mowbray.*

Undoubtedly, if increase were the object, and I had on hand a 'laying' queen of approved race and quality, I would introduce her to the swarmed stock; in the first place, to save her life, and in the second, that she might presently head a second swarm, which, consisting almost wholly of young bees, would be almost invaluable. In the ordinary way, to save expense, and to set free an army of workers who would otherwise be acting as nurse-bees, I would allow a few days' cessation from egg-laying by giving a nearly matured queen-cell, of approved quality, to assure the best breed; or, supposing the breed to be already up to the mark, I would allow the stock to develop its own queen-cells and would use them as required, in the way above suggested. It should always be remembered that in a state of nature bees enjoy a rest from the onerous duties of nursing, and it is at this time when there is very little food consumed within the hive, that the chief surplus of honey is stored.—C. N. Abbott.

A laying queen given to a colony which swarmed early would (not properly managed) soon bring about the same state of affairs again, and there is no advantage in giving such a queen to a late swarmed colony, as the honey flow would be past before her workers could bring surplus 'grist to the mill.' Yet at such a time, and sites correspond, a nucleus with some old hands and a laying queen it would be well to give, forming a fresh nucleus, on a distant site, with the fitting combs displaced by such introduction.—John H. Howard, *Holme, Peterborough.*

It is better to supply the colony with a young laying queen. I have sometimes found, when the bees have been left to rear their own queen, that it has not hatched out, having become chilled, or not received the attention necessary from the bees in their eagerness to store honey. If this is not found out in time it may lead to the loss of the colony.—Henry Beswick.

I would leave the bees to raise their own queen, except I had some queen-cells that would be ready to hatch out in a day or two. A hive having no queen for a few days, and mostly all young bees, would get a nice lot of honey if there was any about.—JOHN WALTON.

If the colony consisted of good workers I should allow them to raise their own queen, expecting to get a continuation of good working qualities in the progeny of the naturally-raised queen, but if they were not good workers I should supersede both the queen at head of swarm and also the parent hive. There are reasons for not putting a laying queen into a colony as soon as they have swarmed; the interval of a few days may mean a larger harvest of honey if all the bees are at liberty to gather it into the hive, whereas if a laying queen was introduced as soon as the swarm had issued the bees remaining would have to act as nurses instead of storing honey.—W. WOODLEY.

If the production of honey was the object which I had in view I would leave the bees to rear their own queen; but if I desired increase of bees I would supply the colony with a laying queen, as by the latter means the colony would the sooner be brought into fit condition for swarming again. I consider no gain in the production of honey from the swarmed colony is obtained by giving a laying queen, as in the majority of instances the progeny of the new queen given would not be fit for work as honey gatherers until the principal honey glut was past; at least so is my experience in this neighbourhood.—H. WOOD, *Lichfield*.

Are you working for honey or increase? If honey, let them raise their own queen; to increase, give them a queen at once. I have repeatedly noticed bees will gather nearly or quite double the honey if left without a queen for the time being—say, the three weeks of a honey flow; all cells should be cut except one for requeening to prevent casts.—JOHN EDEY.

I consider it best to allow a colony to rear its own queen after swarming in the natural way. In my experience, if such a colony is supplied with a fertile queen, the working impulse is checked, and work is carried on languidly even in the midst of a copious honey-flow; and when autumn arrives, I have usually found a smaller population and less honey stored than in colonies allowed to raise their own queen. When, however, a change of race is desired, an alien queen is received more willingly perhaps by a swarmed colony than by any other.—GEORGE RAYNOR.

No. The plan of supplying a laying queen after a swarm issues is not a good one, unless we desire to increase the number of swarms instead of obtaining honey. The introduction of a laying queen will only continue the swarming fever, during which comparatively very little honey is collected. In the first instance, she will destroy the young queens that are in the cells at the time the swarm issued, and will then fill up every empty cell as the workers hatch out with eggs. The increase of the population of the hive will be very rapid; queen-cells will again be formed, and in a short time another swarm will be thrown off. We shall obtain the largest amount of honey if we allow the bees to raise their own queen in the natural way. We place the old colony on a *new stand:* all the flying bees will go back to the original position, where the swarm should be placed, which they will greatly strengthen—this will also lessen the number of bees in the old stock, and do away with their desire to swarm again. On the ninth day after the swarm issues, all the cells containing brood will be sealed over, the nurse-bees will be at liberty, and all those old enough to fly will collect and fill the cells with honey as fast as the bees emerge from them. The young queen usually leaves the hive for her wedding-flight when she is five days old, and in about five or six days more commences to lay. By this time, if there has been a good honey-flow, a quantity of honey will be stored. On the twenty-first day after the swarm all the brood will be hatched out, and we should then extract the honey, and so make room for the young queen to lay.—JOHN M. HOOKER.

[In Mr. Hooker's reply to query last week, the reference should have been to No. 17, and not to No. 2.]

HUNTS BEE-KEEPERS' ASSOCIATION.

The Annual Show of this Association was held in the show-ground of the Hunts Agricultural Society on July 27th. The display of honey was, as was duly to be expected in this wretched season, very scanty, only one class out of eleven, that for run honey, having three exhibits. The prizes offered by the B. B. K. A. were awarded as follows:—Silver medal to R. Allpress for the best 12lb. sections in the Show. This crate of sections took first prize at Cambridge, and last year the exhibitor took bronze medal and other prizes, his first year of bee-keeping and exhibiting. The bronze medal this year went to another cottager, H. J. King, for one dozen bottles of run honey, which would have taken a prize in any company, being quite the best sample we have seen this year. A prize was also awarded to Mr. White for a combination feeder, the only exhibit in its class, which was shown at the B. B. K. A. Conversazione on the 19th ult. The judge was Rev. E. A. Clay, of the Bucks B.K.A.

BERKS BEE-KEEPERS' ASSOCIATION.

The annual exhibition of the Show of this Association was advertised to take place at Clewer Manor Park on the Bank Holiday, August 6th; but, owing to the prevalent unfavourableness of the season, the entries were so few that the executive at the last moment considered themselves justified in resolving that the Show should not be held this year.

BEE-KEEPERS' VOCABULARY;

OR, GLOSSARY OF TECHNICAL AND SCIENTIFIC WORDS USED IN WORKS UPON BEE-KEEPING.

Artificial comb. (*L. ars*, art, and *facio*, to make.)—This name was formerly given to comb-foundation, although Huber used glass tubes, in the shape of cells, for his experiments on the spinning of cocoons, and Quinby made metallic combs and invented a machine for this purpose. No one has succeeded in making artificial combs from wax.

Artificial fertilisation or fecundation.—The impregnation of queens in confinement.

Artificial flight.—Giving bees suffering from dysentery during winter a flight in a warm room or receptacle placed in front of hive, for the purpose of enabling them to void their fæces. (See *British Bee Journal*, vol. x., p. 192.)

Artificial heat.—Warmth artificially produced and applied to bees.

Artificial honey.—Adulterated honey is sometimes improperly called artificial honey. (See Adulterated honey.)

Artificial increase.—Increasing the number of colonies by division, or making artificial swarms.

Artificial pasturage.—Honey-yielding plants raised by cultivation expressly for bees.

Artificial pollen.—Lentil, pea, and wheat flour, also various kinds of meal used as substitutes for natural pollen of flowers, when bees are not able to obtain this; given to supply nitrogenous food for stimulation.

Artificial queen-rearing or raising.—Raising queens in nurseries by means of artificial heat.

Artificial sealing.—Covering combs of stores with a coating of wax, recommended by Knoblauch. This was done by blowing, by means of an atomiser, a spray of molten wax over the combs. (See *British Bee Journal*, vol. v., p. 135.)

Artificial swarm.—A new colony formed from one or more old stocks by human skill and labour; as opposed to natural swarm.

Artificial swarming.—The act of making an artificial swarm.

Artificial tablets.—Sheets of wax with impressions of the bases of the cells upon them, introduced from Germany and used for producing straight combs. Called later comb-foundation.

Artificial ventilation.—Ventilation supplied to hives by artificial means, such as tubes, holes, porous quilts, &c.

Assimilation. *n.* (*L. assimilo*, fr. *ad*, and *similis*, like.)—This is the function by which an organism fixes in its interior a foreign matter, organises this matter, and developes in it vital properties.

Atavism. (*L. atavus*, a great-great-great-grandfather.)—This signifies the recurrence of any peculiarity of ancestor after an intermission of several generations.

Atom. *n.* (*Gr. atomos*, indivisible; fr. *a*, not; *temnein*, to divide. *L. atomus.*)—A hypothetical body. A particle of matter so minute as to admit of no division; the smallest component part of a body.

Atomizer. *n.*—Spray producer, used for spraying combs and bees.

Atrophied. (*Gr. a*, without, *trophe*, nourishment.)—Arrested in development at a very early stage. (See Aborted.)

Attachment cells. (*Fr. attacher*, to tie, or fasten.)—These form the outer row of cells; were attached to the hive or the under side of top bar and side bars in frame-hives. These cells, so called by the Germans, differ from the ordinary six-sided cells in having only five sides and are much thicker, being composed of wax and propolis.

Auditory apparatus. (*L. auditus*, hearing.)—The hearing organs of bees. It is not known for certain where these are situated, but Graber, Braxton Hicks, Mayer, and others, believe them to be located in the antennæ.

Aura seminalis. (*L. aura*, odour, *semen*, seed.)—Used by ancient writers for effluvium, aroma or odour of the male seminal fluid, by means of which it was supposed, by permeating the body of the queens, they were fertilised in their hives. Sometimes also called *seminal* effluvium.

Aurelia. *n.* (*L. aureolus*, dim. of *aureus*; golden.)—The nymph or chrysalis of the insect.

Avoid. *v.* (*Fr. vuider* or *vider*, void, empty.)—To emit or throw out, as to avoid excretions. Instead of this, *void* is now generally used.

Rearing Queens.—At any time when bees carry natural pollen, and the drones are out, or will be at the time the queens will be old enough to make her bridal tour (early in the spring, summer, or late in the season), take the queen from a strong colony, then wait eight days, and cut out every queen-cell and insert a frame of eggs, not larvæ. Be sure that there is not one egg hatched. This is the secret, not *larvæ* but *eggs*. About treble the number of queen-cells will be constructed, and the queen will be of the very best! The longest lived queens that I ever had were reared according to the above method.—W. H. Balch, *Oran, N. Y.* (*American Bee Journal*).

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," c/o *Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.*' *All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts* (*see 2nd page of Advertisements*).

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

THE BEE DEPARTMENT AT THE ROYAL.

[1739.] 'Useful Hints' and 'One who was there' have both noticed my remarks on the Royal Show at Nottingham, which appeared on p. 344 of the *Journal*. My concluding remarks showed that I considered my conduct rather daring, the replies have proved that my fears were not groundless. If one has anything but praise to offer the chances are he will be accounted an enemy, whatever his former conduct might have been. For daring to express an opinion about one of our Committee I was threatened with an action for libel. I do not wish to judge either of my correspondents harshly, but 'One who was there's' allusion to my 'magnificent phrases,' and 'Useful Hint's' allusion to my 'lady friends,' savour somewhat of sneering. I am not so thin-skinned as to care a brass farthing providing I am practical and just, but it was quite refreshing to be told by 'One who was there' that I 'claimed the right of criticising others most freely.'

So much for light skirmishing, now for a few remarks, by the Editor's leave.

I shall neither send Mr. Huckle the materials for a new flag, nor a guinea towards a new tent. The first I will find a 'lady friend' to make if I wish, or, what is better, make it myself. I have conceit enough to think I can manage that when the long evenings come. The second I object to on principle. If the Committee see the need for a new 'amphitheatre,' and have not the funds to provide it, let them face the Association manfully and say so. I for one will help them to the best of my ability, but I do not believe in a private subscription tent, without any trouble on their part to get it, unless I were rich enough to give it all, which unfortunately for them I am not.

As to flowers, I thought I censured myself more than anyone else for not providing a better supply. As to the honey, I *was* aware all of it was sold, and whatever my knowledge of the Committee of the Royal Agricultural Society may be, I still think small samples of honey might have been sold to the 88,000 who were present on the fourth day of the Show, and the Royal Agricultural Society not object to it, and a taste and demand for honey greatly increased amongst the operatives of that part of the country. It did not occur to me that the honey and hives looked any the worse for being handled, 'from curiosity or for instruction by thousands of people,' although the bee department looked far from being spick-and-span. Not wishing to be offensive by repetition, I may assure my two able correspondents that my feelings were shared by a large number who visited the show. I had arranged to meet several friends there, but was prevented from going on the day stipulated. They afterwards wrote me privately *while my remarks were in the press*, and that was the feeling expressed by at least half-a-dozen whose judgment I respect.

And now a word as to the manufacturers. Self-interest undoubtedly induce them to exhibit; precisely similar sentiments induces Societies and Associations of all kinds to offer them prizes for exhibiting. Some

Societies seem to act on the principle that the more the manufacturer is milked the better he will yield. That is true so long as he gets an equivalent for his outlay, when he does not, he stops; there is an end to the endurance of all men. Fancy wanting to charge a firm for space to show a picture-frame filled with medals, on the score of an advertisement, when he can hang it on the walls over his stand to the embellishment of the show and the credit of the department in which he is exhibiting! Then again, as to judging new appliances. As we are dealing partly with agriculture, I will take *ploughs* to illustrate my point. Let six of the leading plough-makers of England make one each and send them to a certain show, and carefully refrain from putting any mark on them, I will undertake to name the makers of five of them—I might even venture the whole six. Now apply that to hives, and 'Useful Hints' and two or three other members of the Committee of the B. B. K. A. would do the same thing for the hives. That being so, what nonsense it is not to allow the same makers to explain the details of any comparatively minute point that they may claim as an 'invention,' when for lack of explanation they now complain that the judges frequently failed to grasp the force of the utility or otherwise of what is claimed by the inventor. Complaints from disappointed exhibitors we shall always get—grumbling is the only salve left to them—but when complaints are made about the integrity of the judge, it becomes altogether a different matter. And I believe we should do far better if both goods and judges are named free and above-board.

I am not so sure, dear 'Useful Hints,' that the Committee will think me a 'kind Mentor,' nor 'feel thankful for such paternal advice.' 'U. H.' is not ignorant of my past labours in the cause of bee-keeping, I will not promise they shall be greater in the future than in the past. After the last Annual Meeting a member playfully patted me on the shoulder and said, 'Dear "A. E." you are a "gone coon," you have committed the unpardonable sin by daring to disapprove of anything that has been done by our Committee.'

I begin to think there was something in his remarks, if the Committee stand still they will stagnate and the end will soon follow; if they lead in a course worthy of themselves and the industry they are pledged to further, spite depression, bad seasons, and profits *nil*, they will have the support of all bee-keepers worthy of the name and of—AMATEUR EXPERT.

MR. WHITE'S COTTAGER HIVE.

[1740.] It has been suggested to me, by a friend, that I should 'drop' the Cottager Hive which I exhibited at the Conversazione of the B. B. K. A. on July 19th, but the advice, good though it may be, I do not feel inclined at present to accept. I shall therefore be glad of your permission to make a few remarks on the hive, and also in reply to the criticism passed upon it.

First, I must repeat that the hive in question is a modification of the one illustrated and described in the issue of the *B. B. J.* for January 19th of the present volume, and also in the first number of the *Bee-keepers' Adviser*. I do not think that it is possible for bee-keepers, after reading the correspondence and queries addressed to the Editor on bee matters generally, to deny that some stepping-stone from the skep to the bar-frame hive is absolutely necessary for the cottager whom we *profess* being desirous to benefit. I have long been convinced that something in this direction is necessary, hence my *attempt* to design a hive which, while not being expensive, would be durable, and might be used on the fixed-comb principle (stock hive and supers), or for the production of sections in the latter.

Mr. Hooker objects to the hive, and considers it a retrograde movement to the extent of forty or fifty years. Where the retrograde movement comes in, or where a simple and cheap cottager's hive was to be found fifty years ago, capable of being used for the production of surplus either in fixed combs made on foundation or in sections I have not yet been able to ascertain.

I naturally differ from Mr. Hooker on both points, because I know of no cottager hive even at the present time, the parts of which, after the fixed-comb principle has been discarded, can be permanently used as section crates; neither do I know of any in which a simpler or more effective plan has been devised for the use and fixing of foundation. And it is here on this foundation question that I consider Mr. Hooker's remarks, to use the mildest term, most unfair: they are as follows:—'he believed that under Mr. White's system the foundation would not keep their position, but would fall one against the other and form a mass in one corner of the hive.' If so, why does Mr. Hooker recommend the use of foundation in bar-frame hives, because the same thing would happen with them in the hands of those who adopt the recommendation to raise the back of the hive and *forget* that it should be only when the frames run from front to back. If Mr. Hooker will refer to my letter describing the original hive (p. 35, present volume *B. B. J.*), he will see that I say that the hive should be placed 'perfectly level both ways.' Now I contend that if the foundation be firmly fixed and the hive set perfectly level both ways, no such catastrophe as that prophesied by him could happen.

Next, with regard to the super boxes when used as section-crates, as arranged in this hive, the bottoms are fixed and the bees pass from below through two holes three-eighths of an inch wide, running the whole length of hive under each row of sections. When the sections are in position I am well aware that the bees do not get to and fro as some might wish, nor as they can in the original hive, which allows a quarter of an inch, nearly the width of section, for whole length of row. But I do not think the bees would stop one another, as stated by Mr. Hooker, in passing and repassing, neither do they in those I have now in use. Both arrangements have been designed with the idea of preventing brace combs and keeping the queen in the brood-chamber.

I now come to what I consider the best part about the hive. When a swarm is hived into a skep worked on the system I have described (*B. B. J.*, p. 20), I recommend that the hive should be set perfectly level both ways, and then, *on account of the difficulty of fixing foundation guides*, raised half an inch or so at back, so as to *compel* the bees to build their combs from front to back across the long parallel holes in the crown-board.

In using the original cottager hive, and also the one under discussion, I should recommend the same plan if the bee-keeper did not resort to the use of foundation. My idea is, however, to prepare the body and super boxes so that he may use foundation both for brood-rearing in the former and the storing of surplus honey in the latter if preferred to sections. Mr. Hooker recommended that bars should be used, and that they should be removed so that the honey might be extracted. Here Mr. Hooker is going too fast. If the cottager can remove the combs attached to the bars for extracting, he should have a bar-frame hive. But perhaps my experience of the capability of a cottager in this direction is unique; anyhow, it is as a result of some years' experience that I have repeatedly objected to the cottager being crammed almost solely with information on the management of a hive beyond his means and the time at his disposal.

Before closing my remarks, I wish to express my regret that I am reported as saying that my plan is in accordance with the opinion of Mr. Abbott. In using the name of Mr. Abbott, I said, perhaps not clearly at first, but I explained, after a remark from Mr. Hooker, that in providing saw-cuts down the sides of the hives I was endeavouring to assist the cottager in getting the combs in the brood-chamber, built from foundation; and

also the combs in the supers containing his surplus honey, which he could cut out and slice, and drain from them the honey, as Mr. Abbott recommended might be done with combs in frames, made from foundation, containing surplus honey (p. 27, vol. ix., *B. B. J.*). Mr. Abbott's recommendation is as valuable now as it was in 1881.—C. N. White, *Somersham, July 28th.*

ADVANTAGES OF A SQUARE FRAME.

[1741.] When I first commenced to keep bees I adopted the Langstroth frame, taking it for granted that such was the best frame for this locality, as apparently the largest number of bee-keepers of that day were using it, taking the country throughout. At the same time, I had a few box-hives that were about one foot square inside, which I intended to transfer to Langstroth frames as soon as swarming is over. As the swarming season approached, I was surprised to find that my bees in the square box-hives had increased much faster that those in the shallow frame, and eventually cast swarms nearly ten days in advance of them. At this I began to look around to see if I could not find a frame-hive of nearly the shape of these box-hives. After considerable investigation I settled down on the square form of frame as used by Elisha Gallup, and since known as the Gallup frame, although it is only the L. frame in a square form. I still used the long shallow frame for one year after deciding on the Gallup, to see if my conclusions were correct; and at the end of the season the advantages of the square frame became so convincing that I discarded the shallow frame altogether. Later on I worked different bee yards, in which were different kinds of frames of the shallow pattern, none of which could I so manipulate as to get the same amount of bees in a given time with the same strength of colony that I could produce with the square form of frame. Especially in case of weak colonies in the spring does this frame prove advantageous in building them up. In order that brood-rearing may go on successfully, the temperature inside the cluster must be at least 90° Fahr., as I have proven many times with a self-registering thermometer, and a small colony can keep up that heat only when they can cluster in the most compact form. This is in the months of April, May, and the first half of June, which I am speaking of; for later in the season the difference in favour of the square frame is not so marked, when the weather is warm right along.

A year or two ago I received a hive from one of the advocates of a still shallower frame than the Langstroth with the request that I should try it. This I did to please the party; and although I found that the claims made regarding the hive in all other respects were verified, yet in the respect of building up in the spring I can do nothing with it. I have no doubt but that these shallow frames are all right for latitude 39° and south, where Mr. L. lived when he invented them; but for our northern latitude, where we have frosts till into June, I cannot think that they are as good. On this morning (the 4th of June) the drops of dew formed into ice on the tops of my tin hive-covers were as large as the end of my little finger, as they were also on the morning of June 2nd.

Again, last year I put a large swarm in another hive of the shallow pattern, this being still shallower than the other, and this spring both came out in good condition upon taking out of the cellar; but to-day neither are anything but nuclei as compared with those which were of equal strength two months ago on Gallup frames. On the first day of June a bee-keeper with whom I have had years of correspondence, but whom I have never seen, living in the western part of the State, called on me. He has some 300 or more colonies of bees, and has made bee-keeping a profitable business, although not very often heard from in the bee-papers. He uses a frame the same size of the Gallup, one way, and ¾-inch larger the other. He told me that, when the Heddon patent hive first came out he thought he would try it, for he was not just satisfied with the amount of surplus room that the top of his hive allowed. The first season he hived fourteen large swarms in these hives, and all went along 'swimmingly' till he set them out of the cellar in the spring; and in spite of all he could do he lost twelve out of the fourteen before June, and the two left were only remnants of colonies, while he lost only three in his other hives, out of 300. Being determined to succeed with the Heddon hive he again filled them in swarming time the past summer; but the result this spring was the same as before, and he did not see but that he should have to give them up on account of not being able to 'spring them' in these hives. It is natural for bees to cluster in a round form, and this they must do to economise the heat to the best advantage, and I am more than ever convinced, from the past sixteen years' experience, that the long shallow frame will not do for this frosty locality, if we would work our bees to the best advantage.—G. W. Doolittle, *Borodino*, N. Y. (*American Gleanings*).

NOTES ON BEE-HIVES.—SECTIONS.

[1742.] In looking over the *Canadian Bee Journal*, vol. iv., No. 15, I find they have copied from the *British Bee Journal* the following remarks of mine, viz.: 'I have seen a remark somewhere that foundation is apt to fall down when placed in a section with a groove on all the four inner faces, unless it is fastened at the top. . . . I have, during the past month, given this matter a very careful test, and find the groove on all the four inner faces is all sufficient.'

I wish to point out that the above is based upon very careful experiments side by side with foundation fixed in various ways, several sorts of foundation being used. The experiments were directed particularly to find out where failures might arise; and I might here say that the past two or three seasons' experiments have been fully confirmed: for, *first*, I find Dadant's extra thin super foundation, when the section is filled with honey, leaves no trace of midrib; *second*, I find the groove on all the four inner faces enables the foundation to be very quickly inserted and kept in place—the bees fastening the foundation right round 'first thing they do.'

I have also always obtained the best capping by using Dadant's foundation; the bees appear to commence quite naturally upon it and utilise every particle.

During the past winter I was somewhat surprised to find a few sheets of foundation had warped entirely out of the grooves; upon consideration I find intense cold had produced this, but in no instance did a single sheet of Dadant's foundation do this. It is not necessary in any case to have a thicker section than usual, the grooves can most easily be made by means of a circular saw or a small plane. Doubtless a split top-bar is necessary when some kinds of foundation are used, but a nasty black line of wax spoils the beauty and symmetry of a section when placed on the table; for the line stands uppermost in full sight. The section should be placed on the dish in the same position as it stood in the hive, this enables slices to be cut without any honey running down the capping.

I should like also to point out, I do not give first place to sectional honey worked upon foundation. Although the line of wax upon split top-rail sections enables us to judge of the foundation, in a slight degree, that has been used, still, if we have a guarantee, *bonâ fide*, that extra thin foundation of pure bees-wax has been used, we give the preference to the sections that do not show that foundation has been used.

Many will think I am exceedingly strong against sections showing lines of wax, but, I might say, some time ago I had glass sections made which showed *four* lines

of wax for each section. There are two equal and and similar square rims of glass of one piece, the foundation is placed between the rims, the rims are pressed together—behold! the foundation most firmly fixed in a moment, and *the lines of wax almost invisible.* The two rims, now virtually one, are just sufficiently large to place within a 1-lb. section. The thinnest foundation is used between the glass rims. These glass sections may be used alone, in similar crates to the Raynor crates, with glass dividers, having quarter-inch spurs on each side of such dividers. The whole row is then compressed to keep each part in place.—F. Bonner-Chambers, F.L.S., *Tref-Eglwys, Caersws, Montgomeryshire, July 26th.*

AN EXPERIENCE.

[1743.] A friend of mine near me bought a Ligurian queen of a well-known dealer about five weeks since, the introduction and all else have been very successful: but the curious part is to come. Last week when examining this said hive, to his surprise the said queen took wing, and after flying round several times alighted on his (the manipulator's) arm, he caught her and carefully placed her on the top of frames, smoked her down and covered up, then stood watching the entrance, when out she came and flew off alone; my friend's heart sank, as he soon lost sight of her, but waiting a few minutes she returned alighting on the next hive (blacks); he then picked her up and again returned her to the proper hive. What makes this seem more strange is that upon examining the next hive he finds a lot of young Ligurians, is it possible this queen can have gone from one hive to another? We should be glad of some of your readers' knowledge on the subject. I wrote you in the early part of the year respecting one lot of mine, and according to advice put the sections on, they quickly got to work, and when more than half full I placed another crate under this, they worked in it also with a vengeance, but although I could see the cells nearly full of honey, none has been sealed over, and lately, owing to cold and wet, I think they have nearly emptied them all again.—George Corbyn, *Snettisham, July 16th.*

THE SEASON.—SIZE OF HIVE.

[1744.] The worst for bee-keepers most likely on record. A late spring, the bees never visited the apricots, which tried hard to bloom about April 20th, but only made a poor show on account of the cold and wet. A few fine days gave them (the bees) a chance to work a little on the willow, which was in full here about the 15th of same month. *Arabis*, the flowering currant, and *Doronicum Caucasicum* came in about May 1st. The latter yields an abundance of pollen, and should be in every garden, especially bee-keepers' gardens. The cuckoo was singing merrily in my garden on the 29th of April. On May the 5th swallows were here. The first butterfly I saw on the 7th, and the first queen-wasp on the 8th. My bees did so well on the cherries, pears, plums, sycamore, whitethorn, that in one or two instances it was necessary to put on the third and fourth super to keep them from swarming; but, alas! the change for the worse came, and continued, as our American brethren said it would, until August 1st, and all the surplus stores they had stored were consumed to keep them from starving. Up to this date, August 4th, I have only taken about 7 lbs. of honey from ten hives. Yet I do not despair, as the weather is now all that can be desired, and the limes are in, and promise well to atone for their failure last year. A better plan, friend 'Peel,' than filling the columns of the *B. B. Journal* with useless complaints respecting the low temperature, &c., would be to patiently wait and trust in Him who has said, 'Seed-time and harvest shall not fail whilst the world stands.' Next year may be as good as this is bad. Others have suffered besides bee-keepers.

Size of Hive or Brood-nest.—It is in my mind, Mr. Editor, and it must come out. Please don't pull my coat-tail. Whilst I am on my legs, I may be allowed to have my say, especially as my chatter does not often trouble you. Is it an established fact beyond all controversy that from ten to fifteen standard frames is the best size or space in which the queen is allowed to lay? Most tiering-up hives range from ten to twelve frames. My experience deceives me if eight or nine are not better in the production of comb honey, and especially so if the brood-nest of a colony on over nine frames is not contracted by division-boards by the middle of the season. It will be said a colony on nine frames would have extra impulse given them to swarm. I think not, if, as some one lately has been trying to show, that the *bees* manage and rule the swarming and not the queen. Air below and ample space above where we want the bees building comb and storing honey, and a colony, in my opinion, would have no greater inducement to swarm on nine frames than on twelve.

One word to 'Sherborne,' and I have done, for unless my memory fails me, it was he who advised our Editor to withhold, and not publish statements respecting large takes of honey from one hive. Any one that is so full of knowledge and experience on bee-keeping that they have no more room to learn, may say, Quite right; all who like myself want and are willing to learn say, Quite wrong. If it were not for making this letter too long, I could tell how one day, after having kept bees about two years, and considered from ten to thirty pounds per hive a good take, I saw three supers in Mr. R. R. Godfrey's office at Grantham, as he said, taken off one hive, each weighing about twenty pounds. This caused me to be dissatisfied with my ten to thirty per hive, and led me to think, experiment, &c., until a few years after I was able to take the coveted 100 lbs. per hive, and did hope, 'Mr. Sherborne,' had this season been as good as last, to have surprised you with double, or nearly so, from one hive.—J. W. Blankley, *Denton, Grantham, Lincolnshire.*

STANDARD FRAMES A DIFFICULTY.

[1745.] Will you kindly advise me on the following points?—The Irish Bee-keepers' Association in their standard hive recommend that it be 9⅛ in. deep, the frame to be 8½ in. deep, same as English standard. This gives a space ⅝ in. from bottom of frame to floor-board. Is not this too much, and is not comb likely to be built in it? All authorities that I have seen say ⅜ in., or at most ½ in. (as in Langstroth hive) should be the space beneath frame. The I.B.K.A. must have had some reason for their recommendation. I am anxious to know, as I have been remodelling my hives so as to correspond to the Irish standard, and I have been perplexed by this matter.

I find it very hard to get a satisfactory standard frame, though I have had samples from several makers. No two of them supply an exactly similar article, though I have always written for a perfectly plain standard frame. Several sent a mortised, or, as they call it, a dovetailed frame, to be put together without a block. These I have found very unsatisfactory, as many of them turn out to be not quite rectangular, so that the ¼ in. space, which should be at the sides of the frame, is not properly kept, every variation from less than ⅛ in. to more than ⅝ in. being apparent. Also it is very difficult to get them put together so as to hang quite true and parallel in the hive, the bottom of the frames nearly touching at some parts, and hanging widely apart at others. I had thought that these were cardinal points, but some of the makers I wrote to about them seemed to make light of them. Then many make their top-

bars ½ in. thick instead of ⅜ in., and at the rabbet on which the frames are to rest is, in the Irish hive, just ⅜ in. below the top, it would necessitate either planing the bar or raising the sides. Lee's dovetailed frames, a sample of which I had from Neighbour & Sons, appear to be accurate, and hang true in the hive, but the top-bar is ½ in., and if I planed off an ⅛ in., so as to make them suit my hives, their depth from top of frame to lower edge of the bottom bars would be only 8¼ in. This, in a hive 9⅛ in. deep, as the Irish standard, would leave ⅞ in. space below the bottom-bar—entirely too much, as it seems to me, unless it be intended, as I have thought might be the case, that the bees should continue to build comb through and below the bottom-bars, and that they would themselves finish off the comb at a proper distance from the floor-board. I should like to use these frames of Lee's except for these drawbacks. Any information on above points will oblige. I should also like very much to find out where I can get a plain frame exactly according to the English or Irish standard definition, to be nailed together in block, so as to be turned out perfectly true and rectangular.—AMATEUR.

[See our reply to above in last week's number, p. 363. —ED.]

INTRODUCTION OF QUEENS.

[1746.] Probably the matter of introducing queens will be one of as much interest as any other during the coming season, as queens are constantly dying off or becoming played out, and some means of replacing them is constantly being inquired about. With most of the methods now before the public, the length of time taken in introducing is a serious matter, as it involves the loss of the productive capacity of the queen at a time when such loss can be illy sustained.

Some years ago I was interested in testing this matter, and experimented quite largely in this direction. I made the results of my experiments public at the time, and since then have tested them time and time again, and as yet have never met with a failure. At this time I will state this method of introduction in brief, in hopes that some of your readers may be benefited thereby. It is as follows:—

On the early afternoon of a pleasant day, when bees are flying freely, I remove the undesirable queen, taking care to destroy every trace or vestige of a queen-cell if any exist. On the evening of the same day, after the foraging bees have returned, and all is quiet in the hive, the new queen is allowed to run in at the entrance, and under no circumstances should the hive be opened or any examination made therein for at least five days hereafter. I myself do not believe that bees recognise each other by any peculiar scent, but if any do, or if the new queen is received two or three days before an opportunity to introduce her occurs, she may be put on top of the frames of the hive she is to be introduced into.

As I stated before, this method has always been a success with myself, and also with many others who have tested it at my suggestion; but even should it fail occasionally (as any method may) the gain in time will far overbalance any possible loss in queens.

I give the method in order that it may be tested and reports made as to its success or otherwise.—J. E. POND, *No. Attleboro, Mass., U.S., April 10th (Canadian Honey Producer).*

BEES AND BEE-STINGS.

[1747.] A correspondent who has travelled in many lands, sends us the following:—'Not long ago you quoted Bishop Hannington's description of how he and his men were attacked and effectually routed by swarms of wild bees, who held and guarded a radius of about 300 yards, wherein lay scattered the loads which the terrified bearers had thrown down in their flight. While the Bishop and his chaplain suffered severely, the unclothed natives were, of course, still more painfully assailed, and from the back of one man about fifty stings were extracted. To-day brings me a letter from the Central Provinces of India, relating how a very similar adventure befell a large picnic party from the hill station of Pachmahri, who sought refuge from the heat of the day in the pleasant shade of some caves. These, however, proved to be already tenanted by wild bees, who resented the intrusion, and attacked the unwelcome visitors with such determination that the whole party of forty persons was put to flight; the bees following them for a considerable distance. Finally by scattering in every direction each fugitive being armed with green boughs with which to beat off the enemy, the latter were induced to return to their caves, but not till several ladies had fainted, and some of the party had been very seriously stung. No fewer than twenty-nine stings were extracted from the face of one gentleman, while, strange to say, his companion escaped without one sting. About three years previously a doctor was so severely stung in this same locality that he died in consequence of the poison thus injected. Considering how many persons even in this country suffer seriously from even one sting, it is a hint worth recollecting that a warm bath containing a good handful of carbonate of soda effectually counteracts the poison of these tiny wounds; and, perhaps, some of your readers (who will be maddened this autumn by the attacks of gnats, or of the tiny midges which rise in such myriads from the dry heather) may thank me for reminding them that a few drops of liquid ammonia or sal-volatile in water, is the most useful of all lotions for allaying the feverish irritation thus caused.'—*St. James's Gazette.*

WAX-MOTHS.—STRONG STOCKS.

[1748.] Wax-moth has been somewhat troublesome this year in the apiary. A straw skep purchased—a bargain (?)—this spring was very much affected, as I found, to my disgust when transferring the contents to a bar-frame hive. The presence of moth was indicated by the usual gunpowder-like dust on the floor-board, besides a number of young worms sheltering round the junction of skep and board, and particularly by groups of from six to ten uncapped brood-cells among the sealed brood, the cells being usually prolonged, and the grubs more than the regulation eight days old, the larvæ of the wax-moth using the unfortunate brood as a larder, and the bees suspicious of something wrong beneath the surface hesitated to seal the cells.

Examination showed traces in some of my own stocks, and I wondered where they came from, until seeing the condition of a neighbour's hives, when the mystery was explained, and I wondered no longer—wax-moths in every stage—cocoons on the floor-board, on the tops of frames, amidst several years' accumulation of propolis, and any number on and among the quilts. A good old-fashioned bee-keeper he is, having those pleasant staple-ended frames, which were daubed over with propolis to a most delightful extent, and almost required the gentle persuasion of a crowbar to manipulate.

However, that does not matter much to him, for his code of management is a simple one—Keep the stocks on seven frames until they swarm, then give them six sections to fill, and think himself lucky if he gets them finished. The swarms are put into small skeps, and, to confess the truth, are brimstoned in the autumn unless sold.

There is one point to be noted by a comparison of his small swarmed hives and several of mine worked on the non-swarming system, and which, though well on thirty frames the previous summer and crowded on ten for the winter, but having old queens, really possessed less possibilities for honey-gathering under good management

than his seven-frame lots, which at the time I saw them were crowded with bees and brood, and in one case a tenanted queen-cell built on the dummy.

Strong stocks are the keynote of successful—it is too risky to say modern—bee-keeping, yet it is very difficult to say exactly what constitutes a strong stock, or, perhaps better, a stock strong for honey-gathering and able to maintain its strength during the entire season. Certainly before the opening of the honey season the great object is to get surplus bees as a means of obtaining surplus honey, or, in other words, as large a proportion of the stock as possible should be free from the cares of housekeeping.

A stock, for instance, just covering ten frames at the commencement of the first flow, is far behind one that reaches that stage a fortnight before, the latter being able to send as many bees to the fields as the former has for field and hive duty together, and if the flow is good it makes a great difference at first.

Time is often all too short before the apple-blossom to build up a stock, particularly in such a spring as this, when the arabis, that earliest of flowering plants, only began to bloom here on 15th April, and apples began to yield on 14th May; and unless a stock contains all the elements of progress within itself, it is hopeless to attempt much before the white clover.

Now, I never examine a hive before the middle of April, and not even then if the outside appearances are satisfactory. Great care is taken to pack well and see that stores are ample in the autumn—for a good hive about 26 lbs. This generally leaves a little spring feeding to be done, and for which purpose I think candy is far better than troubling with syrup, taking care, however, to give it before all the stores are exhausted in the hive. A strong lot will sometimes use up a two-pound cake in a week, if they have the chance.

If not taking up too much space, I should like to give a few extracts from my note-book relating to a very nice lot of black bees, and which may be useful to 'A County Cottager,' or others who may like some standard for reference. Actual date is of but little use as seasons and districts vary so, but I think time of flowering of various honey plants forms a good means of comparison.

2nd April, 1888, bees appear very active; crocus in bloom. 9th April, gave cake candy, 1½ lbs., to encourage breeding. 15th April, peach-trees and arabis begin to bloom. 18th April, American currant and plum-trees. 26th April, gooseberries begin to bloom. 6th May, examined thoroughly for the first time, brood on seven frames; spread brood by inserting worked comb; put on doubling box with four combs; about 21bs. stores left, gave 1½ lbs. candy; covered up very warmly. 14th May, apples begin to bloom. 21st May, about 3 lbs. honey stored in doubling-box. 23rd May, filled up doubling-box (ten frames). 25th May, bees well up on all frames. 30th May, gave third storey (making thirty frames); sycamores full on. 10th June, first few blossoms of white clover appear. 13th June, weather changes to cold and wet, and though little was collected after that date the top box was full of honey. Over 45 lbs. extracted on 2nd July. Had the season been fine this hive would doubtless have made a good record in extracted honey from the white clover.

For working sections I will take another hive of bees, that were Ligurians at some remote period:—2nd April, 1888.—This hive appears one of the most active. 9th April, gave 1½ lbs. candy. 21st April, examined, found five frames brood; eight frames well covered with bees; gave 2 lbs. candy. 30th April, placed empty comb in brood-nest. 7th May, gave two combs in centre of brood-nest, filling up the hive (eleven frames); stores very low, gave 1 lb. candy. 14th May, had nine frames brood. 20th May, ten out of the eleven frames had brood. Thus the bees were almost at swarming point, and in splendid condition for supering.

Even with all one's care failures will happen. For instance, one hive stronger than the last when packed up for the winter, and having a fine young queen, lost half its bees in the winter, and showed no signs of brood until the middle of April. It was as much as I could manage to bring it to full strength in time for the white clover; and the white clover as a honey-producer never came.—HONEYSUCKLE.

Reviews.

Y GWENYNYDD: SEF LLAW-LYFR YMARFEROL AR GADW GWENYN. Gan H. P. Jones, Dinas Mawddwy, a Michael D. Jones, Bala. Bala: Argraffwyd gan H. Evans. Pris swllt.

Lest the above lines should be mistaken by some of our readers for the language of the South Sea Islands, we will inform them that they form the title of a small Welsh book, which might be translated as follows:—'*The Bee-keeper: being a Practical Hand-book on Bee-keeping.* By H. P. Jones, Dinas Mawddwy, and Michael D. Jones, Bala. Bala: Printed by H. Evans. Price One Shilling.' And as many of our readers are residents of the Principality of Wales and conversant with its language, it is but just that we should call their attention to the *first* book, as we have been given to understand, ever published in Welsh on the subject of bee-keeping.

This little volume is the joint production of Mr. H. P. Jones, of Llanerch, Dinas Mawddwy, and the Rev. M. D. Jones, principal of the Independent College of Bala. The latter is responsible only for the literary department; whilst the knowledge it contains is the result of deep reading and about fifteen years' practical experience of Mr. H. P. Jones at his own extensive apiary at Llanerch. Mr. H. P. Jones, also on account of his knowledge as to the treatment of bees, has been for the last few years the recognised expert to the Montgomeryshire Bee-keepers' Association, and in the discharge of the duties pertaining to that office has had ample opportunities of studying the question as to entitle him to be considered an authority upon it. So much for the credentials of the authors.

In turning over the pages of *Y Gwenydd*, we find them full of practical hints and directions for the keeping of bees and the treatment of honey; which will be found most useful to those of our Welsh readers who prefer their mother-tongue to the English language. The book, among other things, contains lessons on the bees and their food, the rearing of bees, their transformations, and their several varieties; on hives and hive-making, comb-foundation, the treatment of bees in the hives, swarming, settling; extraction of honey; the diseases and enemies of bees; and the work and duties of bee-keepers in different seasons of the year: as well as many other matters that we cannot find space to record. In short, it contains sufficient instruction to carry the bee-keeper through all the stages of preparing honey for the market. We may also add that it is illustrated with above fifty engravings, and contains a chapter on the 'Standard Hive of Wales,' by Mr. Hugh H. Jones, of Pontarisgen, Dinas Mawddwy.

This little work should command a ready sale in the Principality of Wales, and we earnestly recommend its careful perusal to farmers and cottagers. It may be had, as it may be seen advertised in this *Journal*, direct from one of the authors.

GUIA DEL APICULTOR BRITANICO, por T. W. Cowan. Traducido por E. de Mercader-Belloch. Barcelona, 1888.—This is a translation of the *British Bee-keepers' Guide Book*, which ought to have appeared last year, but was delayed in consequence of the severe illness of the translator, so that it was not until March of this year that we received the last proofs. The French

edition had already been for some time in circulation in the country, and has been the means of introducing modern bee-keeping in Spain.

BLOMSTER-KALENDER FOR BIAVLERE of Hans Ersley.—This is a useful pamphlet of 31 pages, and treats of plants and flowers producing honey. The first part deals with fertilisation of plants by insects, and the second part more closely concerns the bee-keeper. A list of 286 plants is given, together with their honey, pollen, and propolis values.

Echoes from the Hives.

Hundon, Suffolk, July 31st.—Bees starving. The beans, hawthorn, and clover (our principal reliance), are over, and the eager workers have had no chance of obtaining any surplus from them, but merely hand-to-mouth existence. I am the lucky, or unlucky, possessor of ten stocks, five of which I am feeding, as I found when I overhauled them a fortnight ago, they were in a state of starvation. I think we must give up all hopes of our bees doing anything this year—build up our colonies for a winter siege, and look for brighter prospects another year. I fancy when the skeppist consigns his bees to the sulphur pit, his honey will be little—at least it will be in this neighbourhood.—C. W.

North Wales, July 31st.—I have had a very great treat through the medium of your valuable paper: my visit being to the south of Carnarvonshire. The journey being rather difficult, but amid such scenery as North Wales can truly boast, not tiring in the least, being partly by rail and mail-car. Having an early breakfast, 3.15 a.m., to catch the 4.15 mail, passed the noted Menai Bridges, Carnarvon, arrived at Pwllheli 7 a.m., then proceeded per mail-car, seated with the driver on the box, who pointed out many places of interest, viz., Tremadoc Bay, the lighthouse, Hell's Mouth, &c., with a splendid view across the bay of ten to fifteen miles to Merionethshire. Arrived at 10, being most cordially received, did justice to an early lunch. Then commenced manipulation in a well-arranged apiary of about twenty-four to thirty bar-frame hives. The bees (*Gwenyn*) were very busy, healthy, and docile, with good average of honey plants, borage being the favourite; white clover and heather in abundance. Having been most hospitably treated, one felt sorry when 4 o'clock came, the time to catch the Aberdaven mail. The return journey was made by 9 o'clock, having spent a most enjoyable day without a sting.—No. I GLANRAFON.

Canada, Brantford.—The clover in Canada is a complete failure. We shall not have on an average four pounds to the colony. Basswood may yield well in the western counties, but in the eastern counties I doubt if it will do so, because the drouth is so great. The pasture fields are all bare, and cattle are starving. We shall have a poor yield generally I feel certain. Basswood here is just opening.—R. F. HOLTERMANN.

Honeycott, Hawes, North Yorkshire, Aug. 6th.—This season has been a complete failure so far. Never saw so much bloom as there has been this year; but alas! the poor bees have been unable to visit it except on the 25th of June and the two following days, when they worked on the sycamore and thorns, which were one mass of bloom: then rain and cold winds put a stop to all work, and compelled me to feed to keep them alive. It has been so intensely cold that, to a great extent, it has marred their progress in breeding. August 2nd and 3rd were fine days, and good work was done from white clover; but again it has turned in cold, and not a bee is flying. Swarms are scarce hereabouts. Hope we may have an agreeable change soon.—JOHN WHARTON.

Pontypridd, Aug. 6th.—I feel not a little elated at being able to send in a report of a more cheering sort than those that have characterised the *Bee Journal* of late. On the 30th ult., a customer asked me if I could sell him a pound of honey. I had none in stock, but told him that I should be pleased to extract some, adding that he must take two pounds of honey to recompense me for the extra trouble involved in extracting before the main harvest. I had, some days previous to this, 'hefted' a few of the frames in the upper storeys to ascertain thier weight, and the 'hefting' gave me considerable satisfaction. (I should explain that I didn't remove the quilts to do this.) The extractor was brought forth and set in position, the veil was donned, the carbolised cloth spread over the frames of my best hive for a few minutes, and then turned back. Sir, things were not exactly as I had anticipated. Not a single cell of honey sealed! Not a single cell elongated even! The frames *were* heavy, but heavy with brood. I took out the frame that contained the most honey, passed it through the extractor, bettled the watery substance therefrom, and found, Sir, that I could supply my customer with, instead of two pounds, three ounces of honey. I felt rather small. That customer, who lives in full view of my row of bee-hives, must have a poor opinion of the business capacities of your correspondent, that he should expend a considerable amount of money and energy in an undertaking which yields such results. I don't like to talk about bee-keeping with him now. I am quietly waiting for my revenge in the shape of next season's harvest. In one of the spring numbers of the *Journal* I expressed the hope that my success during the season would be such as to warrant me in dropping the *nom de plume* I have until now used. How remarkable my success has been the foregoing shows, and I feel justified in relinquishing the manifestly inappropriate name of 'Welsh Novice,' and now and hereafter will subscribe myself—EAST GLAMORGAN.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

C.—*Last year's Honey.*—1. No; decidedly it is not right for the Association's silver medal to be awarded for sections filled, as you state, by feeding bees on last year's honey. Prove your case, and the offender will be disqualified. The sections *must* be filled with honey of this year's produce, in accordance with the rules on the schedule. 2. The B.B.K.A. would certainly encourage nothing of the kind you mention.

J. T. D.—*Casting out Queen, Commotion, &c.*—Your bees evidently intended to swarm again, but the weather prevented them carrying out their intention; when the young queen escaped from her cell she was destroyed, either in a royal combat or by the bees, and the queen you returned with the second swarm now reigns. The commotion at the other hive was what is often called 'play.' The bees, having been confined, perhaps for several days, to their hives by bad weather, on the first gleam of sunshine rush out in large numbers for an airing. This is the case especially with young bees and drones. We advise you to leave the division-boards as they are until the time for winter packing arrives, unless the bees require more room, when another frame or two may be given, if the weather prove fine.

C. COVENTRY.—*Superseding Queen, Feeding, &c.*—You did wrong in cutting out the queen-cell. The bees might have intended to supersede their old queen or to swarm. Leave them to follow their own instinct, and do not manipulate, or hunt up the queen too

often. Much injury to the colony results from this practice. You will be able to find the queen towards autumn when the population is reduced. Continue to feed by all means, until your hive reaches the weight of 25lbs. at least.

D. R. Daley.—*Dividing.*—Your proposed plan would assuredly end in failure. A much better plan would be to purchase a skep of bees from a cottager, at a distance of two or three miles, and remove it to your home. Then, after a day or two, drive the bees from the skep into an empty skep and take away their queen. Next take your Ligurian queen from her hive, shake out the driven bees on a board sloping to the entrance of the hive from whence they were driven, and drop the Ligurian queen amongst them as they run into their hive, when she will be well received, and you will possess two Ligurian colonies, as the Ligurian stock will raise a new queen which probably will be fertilised by the Ligurian drones of which you speak. You might follow the same plan with one of your own hives of black bees. Drones are now being destroyed.

E. F. G.—1. *Extracting from Combs containing Brood.*—We deprecate such a course, as many of the brood are killed while so doing. 2. *Sections containing Brood.*—This is usually drone brood, and should be cut out, returning the sections to be repaired and completed. 3. *Granulated Honey.*—Honey after exposure to air or cold becomes partially, and then wholly, solid; it is then granulated.

J. F. R. A.—*Hives Doubled.*—Leave them as they are until end of this month, as in the event of our having some fine and warm weather, honey will be gathered; the recent rains causing the Dutch clover to bloom a second time. Towards the end of this month the brood nest will be contracted, the upper frames can then be removed and the bees crowded on the lower ones.

W. G. Smith.—*Feeding for Winter with Phenolated Syrup.*—There is no necessity to do this if the bees are healthy. Such a course is not recommended by Mr. Cheshire, although we have failed to note any ill effects from it in the case of twelve colonies we so fed last autumn.

An Old Hand.—We have recently visited the apiaries of Messrs. Abbott Bros., and are of opinion that the number of their stocks is about sixty.

The pressure arising from the intervention of the Bank Holiday has caused us to postpone several replies to queries till next week.

SHOWS TO COME.

August 22 & 23.—Shrewsbury. Hon. Secretary, W. G. Preece. Entries close August 15th.

August 29 & 30.—Derbyshire Show at Derby. Hon. Secretary, W. T. Atkins, 6 North Street, Derby.

September 5-7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 15th.

Business Directory.

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Howard, J. H., Holme, Peterborough.
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Simmins' Bee Company, Limtd., Rottingdean, near Brighton.

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HONEY GLASS MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Blow, T. B., Welwyn, Herts.
Pearson, F., Stockton Heath, Warrington.

NOTICE.

The *British Bee Journal* is published by Kent & Co., 23 Paternoster Row, and may be obtained of all Booksellers, and of the following Agents:—

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ANDREU, F. C., Port Mahon, Minorca.
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THE late Hon. Sec. of Northants B. K. A. having left the County, has some Bees, in Cowan's Hives, and good Appliances for Sale, cheap. Address Lamport Gilbert, Irlams-o'th'-Height, Manchester. D 5

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August 16th.

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THE
BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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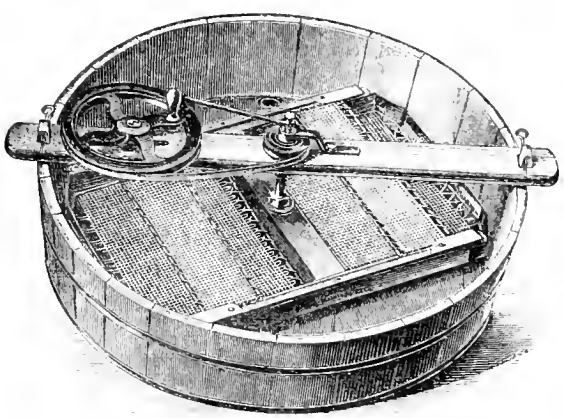
Editorial, Notices, &c.

HORIZONTAL HONEY EXTRACTOR.

The first extractor we made, and which we exhibited at the first show of the British Bee-keepers' Association, at the Crystal Palace, in 1874, was on quite a different principle to those we introduced subsequently. A description of it by Mr. C. N. Abbott will be found in the *British Bee Journal*, Vol. II., pp. 93, 94. From this it will be seen that the combs were arranged so as to radiate from the centre. The combs were uncapped on both sides, and the frames were placed vertically in the cages, the bottom bar towards the central spindle, and the top bar furthest away from it. In this way advantage was taken of the upward inclination of the cells. The extractor worked admirably, and both sides were extracted at the same time. We, however, found that it was only safe to extract old combs, for with new ones, if the machine were revolved at too high a speed, there was a danger of smashing them, and we, therefore, thought for general use it was not safe to recommend this machine. We used it for several years in our own apiary, and at last presented it with the collection of bee-hives and appliances to the British Bee-keepers' Association.

With wired frames there would not be this danger of damaging the combs, and being able to extract from



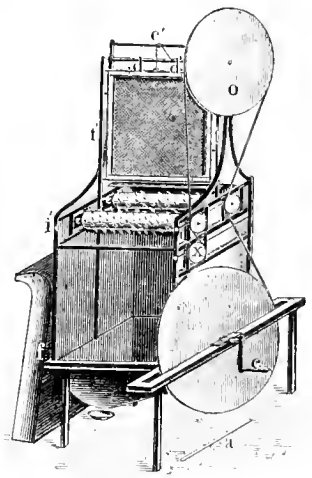
both sides at one operation without even having to reverse the combs is certainly a great saving of time. This was the first time this principle had been introduced, and after a rest of more than ten years it again makes its appearance, but in a slightly altered and improved form. The illustration represents the 'Horizontal Honey Extractor,' invented by M. Bühne-Lauban, of Schlesien, and shows its principle so clearly, that little explanation is needed. In having the cages horizontal, a much shallower tank may be used. The top and bottom of the cage is of woven wire-netting, and after the combs are uncapped on both sides, they are introduced between the wire-netting, the top being made to lift up. The frames are placed just like those in our radiating extractor, with the top bar towards the outside, so that in this case advantage is also taken of the upward inclination of the cells. When in use the extractor can be placed on a table, and slightly inclined, so that the honey may run out of the valve, or hole, at the bottom, into a receptacle beneath. These extractors have the advantage of being inexpensive, and cost only from fifteen to twenty shillings. It is also evident that combs laid horizontally, as in this machine, are not so liable to be broken, consequently, in being able to extract both sides of the comb at one operation, will effect a considerable saving of time.

A NEW UNCAPPING-MACHINE.

Since Count Zorzi first introduced an uncapping machine, there have been several others introduced to bee-keepers, but the objection to most of them has been that they were either too expensive or that they did not work satisfactorily. They have in consequence not come into use, and to become general they must come down in price, like extractors have done. The knife-machines intended to uncap both sides at one operation are either noisy, or, unless the knives are kept as sharp as razors, they tear the combs. The first improvement in the right direction was the substitution of a revolving cylinder having projecting points in it something like the cylinder of a barrel-organ. This was introduced by M. Prochask in 1886, and was illustrated in the *Deutsche Illustrierte Bienenzeitung* of July in that year. The cylinder was vertical, and the comb which was fixed in a frame was pushed past it, much in the same way as the frame is pushed past the knives in Mr. Hooker's patent machine.

M. Peter Wagner, of Kreuzstätten, has just brought out an improvement which, while simplifying the machine, also reduces its cost. It will be seen by referring to the illustration that the apparatus consists

of a square tin can, from which the side, f, is removed to show the interior. The comb to be uncapped is placed into the upright frame, d d, which slides up and down the guide-rods, t t. The two horizontal cylinders are of wood and have a number of iron points stuck into



them. When revolved at a high speed the cappings of the comb are removed by these points as clean as though they were cut off with a knife. The cylinders can be adjusted for combs of different thicknesses, and the proper speed is obtained by turning the handle, e, attached to a disk over which passes a cord. A small wheel, x, is placed in the position seen in illustration to give the cord a firmer grip of the pulley on the cylinder. The same mechanism that revolves the cylinders is made to lower and raise the frame. The wheel, o, revolves the spindle attached to it, and on this a cord is wound which raises or lowers the frame. The bottom of the can is coned so that the honey can run out and be collected in a vessel placed for its reception. The side, f, is moveable, and, as will be seen, is turned over at the top in such a way as to cover the cylinders and prevent splashing of honey. The whole thing is so simple that any tinman could make one from the drawing, —and at a small cost.

USEFUL HINTS.

Weather.—*August 11th.*—The last four days have been days of brilliant sunshine, of which the bees have taken every advantage, after the long, cold, and wet season we have experienced.' Such is the extract from our diary. The rush to and from the hives, and the resounding happy notes from the apiary, are something wonderful to realise after the long incarceration our poor bees have undergone. Section-cases are again filled with bees, and although the meadows are shorn, and the bloom of the bean-fields has faded, we still hope to obtain a few cases of sections completed to keep us in heart for another year. We have a few fields of white clover, over which the 'mower' has not passed, now in full bloom, and freely yielding nectar to our thirsting *protégés*. The lime-bloom is a thing of yesterday, but the hedges are covered with the bloom of the bramble and a few other field flowers are affording their quota of supply. Happy Scotchmen, to whom the beautiful purple heather is promising, or affording, a bountiful harvest of the finest nectar which the earth can supply. May the sun God prove favourable, and grant us a few weeks of bright sunshine for gathering in the fruits of the earth 'corn, honey, wine and oil.'

Honeyless Stocks have been liberally fed through the late inclement season, and are now giving promise of surplus. It is quite possible that the late harvest of this year may be more abundant than the early one, especially where colonies have been kept up in population to surplus honey-storage point. Our advice has been *feed, feed,* and those who have neglected it will now reap the reward of their pennywise and pound-foolish policy.

Bee-plants.—*Echinops Sphærokephalos* is in full bloom, and its globes of bloom are covered—literally crowded—by bees from morn till night. *Borage.* At page 291 (6th edition) of his *Manual of the Apiary,* Professor Cook makes the statement:—'Rape, mustards, and borage seem indifferent to the weather, *but are not favourites with the bees.*' This is entirely contrary to general experience. Our own is, that it would be difficult to name three plants which are greater favourites with the bees. Borage especially has always been considered the one plant most favoured by the bees. All the *Boraginaceæ* in fact are special favourites. *Teucrium, Nepeta,* and other plants of the same class, are in bloom and much visited also.

Starved Brood, or *Bacillus Minor?*—Mr. M'Lain, in a Report to the Commissioners of Apiculture (United States), thus describes what he calls 'starved brood:'—'On opening the hive a slightly offensive odour may be noticed, if the colony has been suffering for some time. If the comb-frame be lifted from the hive, and the bees shaken off, few if any eggs can be found. Of such brood as is sealed the cappings appear to be thin and flat, and slightly sunken, and commonly of a darker colour than is usual in prosperous colonies. On opening the cells they are found to contain dead pupæ in various stages of development, always inferior in size, and the food supply exhausted. In the midst of sealed brood patches of uncapped larvæ appear, sometimes a patch of five or six inches square; and sometimes there appears to have been no effort made towards sealing half the grown larvæ in the hive, although the time for such sealing may be far overdue. The membranes of such larvæ do not present the plump, pearly-white appearance common to well-fed larvæ, but are more or less shrunken and wrinkled; and not unfrequently, when the larvæ have reached the advanced pupa stage, the compound eyes begin to colour, and the cells are partially capped and then abandoned, and the appearance is that commonly designated by the term "bald-headed bees." Sometimes a few of these bees, dwarfed in size, emerge from the cells and engage in the labours of the hive with what vigour and for such term as their limited development will permit. . . . Starved brood means starved bees. If the cause be removed, the effect speedily disappears. All that needs to be done is to supply them with a substitute for those resources essential to their own health and vigour, and indispensable in brood-rearing, in search of which they are rapidly and vainly wearing out their vitality. The recipe for preparing the remedy is as follows:—

Sugar	10 lbs.
Salt	2 tablespoonfuls
Bicarbonate of soda	2 "
Finely-powdered bone-ash ..	2 "
Cream of tartar	1 tablespoonful.

Mix thoroughly, add two quarts of hot water, and stir until thoroughly dissolved, and then boil for two or three minutes only.

'Then take half a pint of fresh milk, to which add three fresh eggs, thoroughly beaten, and when the syrup is cool enough for feeding add the eggs and milk; and when thoroughly stirred let the food be given warm, and in the hive, as you would feed with honey or syrup.'

The author of the above might have been describing the

disease we have designated *Bacillus minor*, so very similar are the symptoms. In the examination of some neighbours' hives, during the last few days, we have discovered several cases affording these identical symptoms. Can the disease—if so it may be called—have been caused by starvation during the long-continued unfavourable weather? If so the remedy is at hand.

Mr. M'Lain goes on to say:—'I used the same food for preventing spring dwindling, and for building up colonies to full strength and efficiency; so that all colonies may be ready for work at the very beginning of the season, when surplus honey may naturally be expected. Given in the hive, the food keeps all the bees at home to aid in performing the functions of brood-rearing, and in keeping up the temperature of the hive; instead of spending their little remaining strength in battling against the cold, damp winds, while searching for the food elements needed to repair the waste and drain upon their vitality while hibernating, and indispensable in brood-rearing.

'The food is not intended for use until after the bees have had a good flight in the spring.

'It is a powerful stimulant and tonic to the adult bees, giving tone and vigour to the organism, and furnishing the elements essential in brood-rearing in the place and manner suited to the convenience and tastes of the bees. No greater quantity should be supplied than is required for the current needs of the colony.'

The unsealed larvæ we have found partially putrescent, and giving out an unpleasant odour, but totally distinct from that of foul brood. Nevertheless a colony thus affected no doubt offers a seed-bed well adapted for the reception of *Bacillus alvei*, or, indeed, of any other *Bacillus*.

Experts Warned.—We strongly advise all experts to keep a sharp watch for the above-named symptoms in the colonies examined during their autumnal tours. If no remedy be applied these diseased colonies may linger for a time, but sooner or later they must perish.

Removal of the most diseased combs, feeding on phenolised syrup, and a change of queens, are amongst the most effective remedies, at the same time, as great care is requisite in the use of disinfecting agents as in the manipulation of actual foul brood. It is very probable that after the late unfavourable season, many cases of both diseases will be discovered by a careful and minute examination of the brood combs of colonies hitherto unsuspected.

Preparations for Winter, where there is little or no forage for the bees, are best made early, and a good supply of syrup during the present month will have more chance of being fully sealed than if given a month later.

Condemned Bees also should be obtained, where possible, in August, whether for strengthening or for forming colonies, but the greatest care should be exercised lest foul brood be imported.

Re-queening of colonies possessed of aged queens unlikely to survive the winter, may now be carried out advantageously, the price of Carniolan and other queens having approached its lowest limit. Our experience of Carniolans during the present season is more favourable than that derived from former trials. Undoubtedly they are the quietest of all bees when under manipulation. They are excellent workers, and the queens are very prolific. The race is between these and the gentle (when pure) Italians.

The fecundity of Carniolans and Italians when pure and of good strains, is in the proportion of four to three at least, when compared with the best strains of black bees of which we have any experience.

Extracting—where there is honey to be extracted—should be finished without delay, and care must be taken not to start robbing. During a honey-dearth bees are simply mad after honey, and a little carelessness may set a whole apiary 'by the ears,' the upshot being the destruction of many, if not all, colonies.

Wasps.—The paucity of wasps in our own neighbourhood is remarkable. We have certainly seen an odd specimen or two, but that is all. Wherever they are abundant the nests should be destroyed, both as a check to future production, and present pilfering and worry to the bees.

After-Swarms and Swarmed Colonies should be carefully examined in order to ascertain that their young queens are fecundated and laying. Some colonies will doubtless be found queenless owing to loss when seeking to mate during the late inclement season. Such hives become receptacles for the poor drones discarded from more fortunate colonies, and have few worker bees. In such case a frame of hatching brood inserted at the same time as the alien queen, will prove of great advantage.

Manipulation.—When there is the least disposition to robbing, this should be performed in the evening, and entrances should be contracted by means of perforated zinc slides which allow ventilation and enable the bees to defend themselves against robbers.

Selected Query.

[20.] *Can honey be obtained from a swarm the same season without injury; if so, how is it best done?*

Yes; if the season is a good one, and from casts too. It is best effected by putting the bees on worked-out comb, and letting them store, as they will do, in the outside bars, which may be taken away as they are sealed. When the hive becomes crowded with young bees, put on super if honey flow is likely to continue, or a virgin swarm may be thrown off.—E. Ball, *Melton Mowbray*.

Undoubtedly, the swarm being sufficiently early, and the season not unfavourable. In proof I would state that on the 28th of April, 1871, I supplied Mr. F. Cheshire, then of Acton, with a natural swarm of Ligurian bees in a Woodbury hive. They were the first of the race he ever possessed, and under my direction he fed them through their early difficulties until they had filled their hive with combs, when he put on a glass super which on the 15th of July of the same year was removed, and which contained 14 lbs. of choicest comb honey. The bees produced also a second super of 10 lbs. weight, which was removed on August 15 following: and as evidence that they were deprived *without injury*, I would say that without autumn feeding they wintered well, and in the spring of 1873 sent forth four swarms during the first fortnight of May, and these were made into five stocks, all of which with their parent did well.—C. N. Abbott.

Yes. Small early swarms often render a passable account, larger swarms doing better. Economising the work of each by placing them on partly worked out, or foundation-filled frames, and judiciously feeding until established in the new home, will add to the storing in surplus crates and bodies. All things considered, brood frames a natural distance are desirable, and should contraction of the brood-chamber be used as a means for more work above, frames 6 inches deep may form the brood-chamber. The bee-master to remember that contraction in any direction should be followed by free feeding, and thus give a winter's food store to those we have taken from, or evil will result.—John H. Howard, *Holme, Peterboro*.

Yes, in a good season; good results may be obtained by using full sheets of foundation in six frames, taking two or three frames of brood from parent hive, and place an old stand, feed with good syrup for one week, then put on supers.—Tom Sells.

Yes, certainly. Feed if wet or cold. Confine to as few frames as possible, and place crate of sections on as soon as the foundation (full sheets of course) has been fairly worked out, which should be in five or six days.—Henry Beswick.

That would entirely depend on the earliness or otherwise of the swarm, and also on the season. I have many times obtained crates of sections from new swarms the same season. If you have an early swarm and hive them on full-sheets of foundation, feeding steadily for a few days, they will work out the foundation and fill it with eggs, brood, and food; then put on your super, and if the season is right you may get a couple of crates of sections, containing twenty-one each, off the hive, the first season leaving food enough for the bees to winter on.—W. Woodley.

Some seasons I have taken about thirty pounds of honey from a swarm by supering them in the usual way, and have left them abundance for wintering below. In our locality this season I fear it cannot be done.—John Walton.

Yes, by hiving the swarm on six frames containing full sheets of foundation; and as these are fully built out increase the number to eight by adding one frame at a time in the centre of the brood nest, and when fully built out add crate of sections on top, or if extracted honey is required give clean, tough old combs behind excluder zinc at back of brood nest.—H. Wood, *Lichfield.*

Not in seasons like the present, but in a fairly good season it may. If a strong colony swarm naturally in May or early June, when the honey-flow is on, place it in a new hive on the parent colony's stand, and remove the latter to a new position. Supply the swarm with a couple of brood-frames from the parent colony, and fill up with frames containing whole sheets of foundation, and place upon it a queen-excluding honey-board, upon which the section-case or extracting frames should be placed at once. The parent colony may be treated as a nucleus for queen-raising and uniting in the autumn, or it may be kept sound if desired.—George Raynor.

Yes. Take the super from the old stock, and put it on the swarm, with a queen-excluder honey-board between.—J. M. Hooker.

Foreign.

THE BRUSSELS INTERNATIONAL BEE EXHIBITION.

Our Special Correspondent at Brussels writes that the International Exhibition of Bee Culture, organized with the consent of the Government by the Royal Floral and Linnean Societies of Brussels, was opened on Saturday, 11th August. It is the first Bee Exhibition held on such a large scale in Belgium, and is very highly creditable to all concerned, and much is due to the energy of Mons. T. Vernieuwe, the secretary. Continental bee-keepers and manufacturers are, of course, in force, but Great Britain is represented solely by Mr. Thomas B. Blow, of Welwyn. The Juries proceeded to make their awards on Saturday, and at 8 p.m. had completed their labours. The results have not yet been officially stated, but we learn that the representative of Great Britain has carried off the cream of the prizes. Full particulars will follow in our next issue.

NEW ZEALAND.

Humble Bees.

Knowing I had been interested in the importation of humble bees to New Zealand, Mr. Douglass, of Motiti Island, Bay of Plenty, very kindly called upon me and gave me information regarding some queens he obtained from Canterbury, New Zealand, last November. Mr. Douglass was anxious to test the merits of the humble bee so far as its effects upon the cross-fertilisation of red clover are concerned, and rightly conjectured that his island would be a capital place to try them. He accordingly procured through a friend eight queens, which were packed in a small box, and provided with food and water. Only four out of the eight, however, reached him alive, and these were liberated. He believes that the four queens successfully established nests, and that there are now several hundred bees, the offspring from these. Mr. Douglass states that they work vigorously on the red clover, and the result is that the latter is seeding freely, a thing that he has not known during a residence of eighteen years on the island.

Motiti is but six miles from the mainland, and he wonders whether the bees could reach the latter and establish themselves there. I have no doubt when the queens get more numerous that some will find their way on to the mainland. Given a favourable wind, it would take but a few minutes for them to fly that distance. I have heard nothing unfavourable from bee-keepers with regard to the humble bees in Canterbury during the past season.—I. Hopkins, *March 20th*, 1888 (*New Zealand Farmer.*)

CANADA.

I have been waiting to give you some news about apiculture here. I can give you none, for as far as regards the honey harvest it is a complete failure all round the country. The bees have not even gathered enough for their winter's supply. The heat in the month of June was tropical, and during this month we have had continual storms and the temperature became much lower, so much so that sometimes we have been obliged to clothe ourselves as in winter.—R. de Niederhausern, *Woodstock, 24th July.*

ASSOCIATIONS.

CALEDONIAN APIARIAN SOCIETY.

The fifteenth annual Show of this Society was held in connexion with the Highland and Agricultural Show in Glasgow on the 24th to 27th of last month. The show of honey was small compared with former years on account of the rules of the Schedule confining it to this year's produce. Notwithstanding, the greater part of the honey shown was 1st year's, with one or two exceptions. The main feature of attraction was the observatory hives, the first and second in this class being specially admired for ingenuity in their construction. The display of hives and bee-furniture was large. To increase the attraction in this interesting and profitable pursuit, at certain periods of the day experts showed the manipulation of the bees in a special tent. The Rev. J. B. Robertson devoted a good part of the time in lecturing and describing the practical management while the bee-driving was going on. The following were among the prize-takers:—

Best observatory hive: 1 (Highland Society's medal) and 2, Wm. McNally, Glenluce; 3, Wm. Munn, Ardenadam. Best frame hive, under 20s.: 1 and 3, Wm. McNally; 2, J. D. McNally, Springburn. Most serviceable hive: Wm. McNally. Best straw hive: Wm. McNally. Wax, not less than 4 lbs.: 1, Wm. McNally; 2, J. D. McNally; 3, W. W. Young, Perth. Best display of honey: 1, and Highland Society's medal, Wm. McNally. Super above 20 lbs.: Sidney Roebuck, Dumfries. Display of honey under 100 lbs.: J. D. McNally. Twenty-four 1-lb. sections: S. Roebuck. Twelve 2-lb. sections: S. Roebuck. Twelve 1-lb. jars: 1, J. Townsley, Dumfries; 2, W. McNally; 3, S. Roebuck. Granulated honey: 1, J. D. McNally; 2, G. D. Gordon, Tollcross. Design in honey-comb: 1, J. D. McNally; 2, S. Roebuck. Bell-glass: S. Roebuck. Super above 10 lbs.: Miss Townsley. Wine made from honey: 1, Ebenezer McNally; 2, J. D. McNally. Honey mead: Wm. McNally. Honey-cake: J. D. McNally. Collection of honey goods: E. McNally. Collection of hives and bee-furniture: 1, Wm. McNally; 2, W. W. Young. Honey extractor: 1 and 3, Wm. McNally. Honey press: W. W. Young. Diagrams, &c.: E. McNally. Honey-producing plants: E. McNally.

WATERFORD BEE AND HONEY SHOW.

The second bee and honey show was held in Waterford on the 19th July in connexion with the annual show of the Horticultural Society. The entries were very few, owing to the bad honey season, but the quality of the exhibits was very good. Although no prizes for appliances were offered, there was a small exhibit sent by Messrs. Abbott Bros., and some of 'Neighbour's hives' were shown by Messrs. George White & Co. of Waterford. The tent of the Irish Association was present, and lectures and demonstrations were given by Dr. Knight, Dublin, late Hon. Sec. to the I.B.K.A., who drove bees and lectured on the bar-frame hive, and by Miss Currey of Lismore on inverting skeps.

One unique feature in the show was a table with a number of microscopes, presided over by Mr. Francis Jones, with a number of beautifully prepared slides, showing the anatomy of the honey bee, prepared specially for the occasion by Dr. Ringrose Atkins.

The prize-winners were as follows:—Class 1.—For twenty-four 4½ × 4½ sections.—1st prize, Miss Bolton; 2nd, Mr. Leonard; 3rd, Mr. Francis Jones. Class 2.—For twelve 1-lb. bottles of extracted honey.—No first prize awarded; 2nd, Mr. F. G. Barlow. Cottagers' Classes.—Class 3.—For a super of any kind.—No first prize awarded; 2nd, Mr. P. Shelly. Class 4.—No first prize awarded; 2nd, Mr. John Condon.

IRISH BEE-KEEPERS' ASSOCIATION.

The Committee met on the 7th inst. Present—Father Kavanagh (in the chair), Dr. Knight, Messrs. Millner, Sproule, Gillies, and the Hon. Secretary. The Secretary reported that the time for making entries of honey for the Irish Exhibition had been extended to the 18th inst., on account of the lateness and unfavourableness of the season. It was resolved to hold a conversazione on the 28th inst., the first day of the Horse Show.

DAMAGES TO A BEE HIVE.—At the Snaith Petty Sessions, held on Thursday, the 26th July, Chas. Terry and Samuel Townend, Little Smeaton, were summoned by Joseph Clark, farm-labourer, Little Smeaton, for doing wilful damage to a bee-hive belonging to the complainant. Mr. Hall, Doncaster, appeared for the complainant; Mr. Dunne represented the defendants, who pleaded not guilty. The first witness was John Smith, a boy eleven years of age, who said he knew the complainant when he lived at Kirk Smeaton. He had a bee-hive in his garden, and after plaintiff, who was in the employ of the defendant Townend's father, had left Little Smeaton, the hive remained in the garden. On Saturday afternoon, the 7th inst., he saw the two defendants enter the complainant's premises. Terry then turned the hive over, and Townend stood by. After doing this, they returned into their own yard. By Mr. Dunne: He did not see Terry push the hive over. Mr. Dunn having addressed the Bench for the defence, a fine of 1s., damages 10s., and 28s. 6d. costs, was imposed.—*Goole Weekly Times.*

INVESTMENTS IN BEE-KEEPING.—Statistics show that the total amount of honey produced annually in America is estimated at 120,000,000 pounds, which at the average of 15 cents per pound, places the value of the product in first hands at $18,000,000. The product of the hive is not the only thing valuable about this industry, evidenced by the fact that the colonies in this country number over 3,000,000. At the average price of $11 per colony, their value would be $33,000,000. This sum, added to the total product of the hives, makes the total involved $51,000,000. The United States and Canada produce the bulk of the product.—*City and Country* (*America*).

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR *of the "British Bee Journal," c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts* (see 2nd page of Advertisements.)

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

HONEY IMPORTS.

The value of honey imported into the United Kingdom during the month of July, 1888, was 5820*l.*—JOHN COURROUX, *Statistical Office, H.M. Customs, Aug. 7th.*

SHALL WE SUPERSEDE OLD QUEENS OURSELVES?

[1749.] My attention has been called to the replies lately given to this question in the Question-Box department of one of our bee-journals. Seven out of twenty who furnished replies gave no decided opinion either way, while the other thirteen all replied in the negative. The principal reason given, when any was given for the opinions, was that the bees knew when to do this work better than we did, while one said it cost less to let the bees do the work themselves; and another said that superseding by rule would often depose queens of great value. As my opinions and practice have been directly opposite to those given by the thirteen, I will try to give my reasons for the same, as the time of year is near at hand when such work should be done, if done at all.

The assertion, that bees know better when to do this work than we do, is in a certain sense true, and in other ways not true; for while they frequently supersede their queens before the apiarist can possibly detect any failure of the queen, or, at least, before he would detect it in the ordinary routine of work, they frequently retain failing queens, if allowed to do so, for months after they are nearly worthless: but all are agreed that such queens should be replaced by the bee-keeper. The fact that, in following any rule of superseding on account of age, we will sometimes destroy queens good for yet another season, is also true; but this is only one item to be considered in making a decision of what is best to do, and not the conclusive reason that the one who made it seemed to consider it was.

The entire question is one simply of profit and loss; that is, a question of which way costs the least. On the one hand, we have the expense of furnishing the colonies with the young queens, which any one can easily determine for himself, and to this must be added the value of an occasional queen that would be destroyed that would be useful for yet another season. This last item is much less than many suppose it to be, and less than I supposed it was until after I had closely observed the matter for several years. On the other hand, we have a material reduction of our honey-crop, resulting from the failure of many old queens at a critical time of year. In our Northern States the time of year when such failure will lessen the amount of honey stored by the colony extends from late in the fall until about July 1st next; and it is practically impossible to detect this failure in time to entirely prevent the loss of honey. The bees do very little superseding of their own accord at this season of the year; in fact, practically none at all of queens that are commencing to fail, but not yet entirely so. At least nine-tenths of the superseding in my apiary in

Northern Iowa was done in the months of July and August.

To aid me in getting at the real facts in this matter as well as in others, I have always kept a complete record of all my queens, and have practised clipping their wings. This last enabled me to keep a correct record of each queen, without any guess-work. I soon noticed that those colonies whose queen was in her fourth season nearly always gave me less than the average amount of honey, and enough less, too, to much more than pay for the expenses of having given them young queens the fall before, and allow largely for the value of such good queens as might be killed while doing so. I never killed all of my third-season queens, although I think it would have paid to do so; but I always kept a few of the best ones, so I have had both kinds of queens to compare results from for a number of years.

A colony which is very strong at the commencement of the honey-flow will store more honey according to its numbers than will a medium strong one, and only queens in prime vigour can get their colonies strong by the time white clover commences to yield; and even if old, and yet good, they are rarely ever as vigorous as are younger ones; and my main reliance for surplus honey was always on those colonies having queens in their second or third season.

It is quite a long while from the time brood-rearing ceases in the fall and the first of July following: and any failure of the queen during this time, even if only partial, seriously diminishes the number of mature bees the hive will contain during the honey harvest, and no failure of a queen can take place during this time that can be noticed by the apiarist, soon enough to prevent a serious reduction of the amount of brood that will be raised in time for the harvest.

A much larger production of colonies having old queens will be weak in the spring than of those having younger queens; and as re-queening can be done so much cheaper and better in the fall than in the spring, I prefer to do it then, even if half the queens I destroy would be good for yet another year.

Many of our best apiarists—Doolittle, Hutchinson, and others—recommend the contraction system during swarming; but all seem to agree that swarms having old queens seem much more inclined to build drone-comb than do others.

In speaking of old queens, I mean those that have done duty for three seasons, including the one in which they were raised. In rare cases I have known queens to do duty the fifth season; but a very large proportion will not do satisfactory work during their fourth season, a much larger proportion than many suppose is the case, unless they have specially observed this point for a number of years.

As already said, the question is one of relative profit and loss. On one hand we have the expense of the young queens, and the value of the few good queens that will be destroyed; on the other, we have the very material shrinkage of the honey crop, the probable loss of some colonies, &c., and there is no question in my mind that the last items exceed the first ones many times over.—O. O. Poppleton, *Apartado, 278, Havana, Cuba, June 6th* (*Amer. Bee Journal*).

ARTIFICIAL HONEY-COMB.

[1750.] At the request of the editor of the *Review*, I have written the following concerning my new artificial honeycomb and its manufacture:—

First, in regard to the comb itself, it is admitted, by all who have seen it, to be a successful attempt to artificially produce that which has so long defied all attempts at imitation—the honey-comb of the bee.

At present it is made only in pieces the exact size to fit in a one-pound section, but it will shortly be manufactured of any size up to 12 × 18 inches.

The walls are as thin as natural comb—($\frac{1}{250}$ of an inch thick)—and the height is unlimited. The septum is also $\frac{1}{250}$ of an inch thick.

The idea is not to furnish the bees with foundation to draw out, but with comb; to add to if necessary, but which will require no further manipulation. For this reason I can subject the wax to such enormous pressure in working that its structure is radically changed. Pressure will harden wax very much. Every bee-keeper must have noticed how much softer are the little white pellets of wax dropped by the bees when comb-building than the finished comb which has been pressed into shape by their jaws. It is only when we consider what a very small area of wax is pressed at a time that we realise how great this pressure is. It is by rolling between heavy rollers that soft brass is made into hard brass, and wax is hardened in the same way. This renders it possible to make the artificial comb thinner even than that made by the bees.

The comb is also made with a wooden base of thin veneer for use in the brood-chamber. I find that, with a cell of about $\frac{3}{16}$ of an inch in depth, the bees make no distinction between wood base and natural comb, and breed and store honey in them without any objection whatever. Of course the advantages of such a comb are too obvious to mention, and it can be made much cheaper than wired frames of foundation.

The machine for making the comb is almost impossible to describe without illustrations. I can say, however, that it is totally different in every respect from any foundation mill or press. It does not use sheets of wax, but takes the wax in a block, about six inches thick, and delivers it in a continuous stream of comb at the rate of about one foot of comb per minute. This is done by passing it through a steel plate, and upon the accuracy of this plate depends the success of the machine. I have succeeded, however, in making it so perfectly that the comb is exactly $\frac{1}{250}$ of an inch in every part. The comb is then cut into three-foot lengths, and fed to a second machine which puts in the base and trims the comb to any required depth of cell. The wax can be worked at any temperature within reasonable limits; and, as I have said before, the character of the product largely depends upon the temperature at which it is made. The harder it is pressed the more tenacious is the comb.

As to the effect of the new article on the honey market, I see no reason why comb-honey cannot be produced almost as cheaply as extracted is now; it surely is no more work for the bees to store their honey in these combs than in such combs as are now used for extracting. A perfectly filled section will be obtained, and one well fastened on all sides to the section box. I think it doubtful, however, if an artificial comb much thicker than one inch could be used advantageously on account of the difficulty in ripening the honey.

I am anxious to have the comb fully tested this season, and will be pleased to hear from any bee-keepers who are desirous of giving it a trial. I will send samples for postage only.

The machine and the comb will both be fully patented in this and other countries. These patents are now being obtained.—E. B. Weed, 238 *Third Street, Detroit, Mich., July 8th* (*Bee-keepers' Review*).

ABBOTT BROTHERS' APIARIES.

[1751.] We notice in *B. B. J.*, page 387, that you estimate our stocks in *apiaries* as about sixty. As this may give some folks a wrong idea of the extent of our plant, we shall consider it a favour if you will correct it. The Fairlawn Apiary (to which, probably, you allude) has over sixty stocks, and our Great Western Apiary averages sixty-eight; we also have a few in our timber-yard; in all a good 130.—Abbott Bros.

[Our reply referred only to Fairlawn.—Ed.]

HELP IN THE APIARY.

[1752.] In answer to your request to bee-keepers, as per *Gleanings* for June 1st, page 426, I will say that a man endowed with common energy, and working less than 150 days in the year, manages for us six apiaries, numbering about 400 colonies; that he finds time also to work at two other apiaries, one for himself and one for another party, and that he has some time to spare, although some of these apiaries are ten to twelve miles from ours, which is in about a central position.

Of course, we give help to our apiarist at the time of extracting, for we raise, more especially, extracted honey. As we extract, on an average, 1250 lbs. per day, our crop, when amounting to above 20,000 lbs., requires sixteen days' work for two men and a boy, so the average number of days' work amounts to about 200 per year. Good results with so little work cannot be attained unless the apiaries are organized for the purpose.

You know, probably, that we use very capacious hives, having adopted, after several years of careful comparison, the Quinby suspended-frame hives, enlarged to ten frames, and a partition board. As we enlarge the space just as soon as the crop begins, the number of our natural swarms does not exceed two or three per cent, our bees swarming only when they raise queens in the height of the honey season. To enlarge the room we add supers filled with half-frames, provided with combs. Before the invention of comb-foundation, we used to adjust in these half-frames all the drone-combs removed from the brood-chamber. We have some of these which are twenty years old, and which have been emptied nearly every year since.

Having from 1200 to 1500 of these combs in each of our six apiaries, we place successively on each hive as many supers as necessary; our rule being never to extract, if possible, till the crop is at an end. In this way we often have three of these supers, weighing about fifty lbs. each, on some hives; yet our spring crop is short, coming to an end with the clover blossoms, for there are very few linden-trees in this part of Illinois.

When we extract, our man takes out the surplus combs and brushes the bees; another brings them to the extracting-room; another uncaps; a boy turns the machine, and places the empty combs back in the supers. After sundown they are replaced on the hives, to be dried by the bees.

As we do not extract from the brood-chamber, nine years out of ten our bees have a large quantity of good honey for winter, and are generally strong in the spring. We are convinced that, but for the capacity of our hives and the strength of our colonies after winter, our surplus crop would be light, since it ceases just when the linden blooms, and yields a crop for apiaries better situated.

Our surplus-boxes are left on the hives for the fall crop, emptied again if necessary, then given back again, to be removed late in the season; then they are housed securely away from mice, in cold rooms, where the frost kills the bee-moths if any are in the combs.

The floor of the room in which the extracting is done is covered with painted cloth. The piles of surplus-boxes, in which the emptied combs are put back, are placed in tin pans made on purpose, and the men, while waiting for the sun to set, clean the room. By these means the work is far from being as dirty as you seem to suppose.

Like our good friend Grimm, we do not manage our bees intensively, convinced, as we are, that our course pays better than the intensive method adopted by most of our best bee-keepers.—CHAS. DADANT. *Hamilton, Ill.*

THE DRAGON-FLY AS AN ENEMY TO BEES.

[1753.] From what I saw a few days ago, I find that bees have much to fear from the 'dragon-fly.' Whilst driving along a country lane the other day, I observed a dragon-fly in pursuit of a bee, which it caught in mid-air, and carried off to a neighbouring hedge to devour. Running to the spot where the fly had settled, I found it holding the bee with its fore-legs, and sucking its head; and so intent was it, that I caught it and carried it to my carriage, before it relinquished its hold of its prey. The poor bee was quite dead, and its head reduced to a pulp. Next day a man told me that he had lost his only stock of bees last year through the murderous attacks of these flies. He had seen a dragon-fly come out of his skep frequently, and his bees gradually dwindled away in a most mysterious fashion, though it was in the height of the honey-flow. At last he raised the skep one day, and found upon the floor-board a huge mass of headless bees. His suspicions that the dragon-fly was the cause of his loss were confirmed when I told him what I had seen the previous day, and great was his regret that he had not saved his pets by destroying their enemies in time. In future I shall kill every dragon-fly I can catch, and recommend your readers to do likewise.—JENKIN DAVIES.

A CHAT ON CURRENT TOPICS.

PREPARATION FOR WINTER.

[1754.] I am glad there is one bee-keeper besides myself that had a good-enough opinion of a bee-space over the brood-chamber in winter as to openly recommend it in the *B. B. Journal*. Such a thing has not been tried by the majority of bee-keepers on account of the draught that it is said to cause round the bees, and which said draught is also said to cause dysentery, &c. I think otherwise, and fully agree with J. E. Pond on this subject, viz., that a Hill's device—or a something that allows free access from frame to frame without causing the bees to go out of the heat of the cluster to reach their stores—is equal to, if it does not surpass, the much-talked-about and strongly-recommended winter passages. I have tested the matter quite enough to satisfy myself that my bees always turn out, or open, in the spring with a Hill's device, or something that answers for the same, better that way than any other; and that for the following reasons:—1. That there is fresh air round about the bees; nearly everybody acknowledges that this is good, by leaving entrances at full width, *but there is no draught* if proper quilts and chaff—*wheat preferred*, either put loosely in an empty crate or in cushions—is used. 2. Winter passages are said to be quickly cut through a number of frames, in next to no time to those that have more time on their hands than most poor cottagers have. Perhaps they can, but not so quickly as placing a Hill's device on the top of frames; to say nothing of pulling the brood-chamber to pieces after it has been put square for the winter, and to say nothing of the stings—we must not forget them—for that means a good deal to some, no doubt. I should like to see a novice cutting winter passages through the combs of a strong stock of hybrids I came across the other day, it was not safe to be within half a mile of them. 3. In many cases the winter passages are never built up again, thus causing the queen that much less space to deposit her eggs in. 4. Most bee-keepers agree that after a queen has been removed from a stock, the cutting of the combs like unto the cutting of winter passages has the effect of greatly inducing the bees to build queen-cells, though they will find a place to put them without that.

Now I fancy I have noticed that these holes that have been cut for winter passages, and not built up the following spring, are a great—well, a temptation, when swarming time comes round to them, for the bees to put queen-cells in when queen-cells are not wanted by the bee-keeper, but a hive full of bees, plenty of white clover, and fine weather for them to visit it.—J. W. BLANKLEY, *Grantham, Lincolnshire.*

PAPER QUILTS.

[1755.] In reply to your correspondent who invites reports, p. 345, upon paper quilts, I may say that I have used the next thing to them, namely, a cushion six inches thick, stuffed with paper of all sorts torn into small pieces. This cushion completely fills the entire space inside the super case over the calico quilt, and keeps the stock very snug and warm during the winter. But what I have used for many years, and much prefer to anything else, is a similar cushion filled with dry beech or other forest leaves. This keeps the bees all right, is always sweet, clean, and dry, does not harbour insects, and is remarkably light and handy to put on or off, which my paper cushion is not. However, if I could not obtain leaves or moss I should use nothing but paper stuffing for my winter packing.—H. W. Lett, M.A.

A TWIN-HIVE.

[1756.] I herewith send you sketch and description of my twin-hive. The dimensions are as follows:—Outside measurement—length 40 inches, width 24 inches, depth from floor-board to eaves 24 inches. It has a span roof, $\frac{1}{2}$ inch, boards covered with four full-sized sheets of tin, and is thoroughly waterproof. It stands on four strong legs, 2 × 2½ inches, and is twenty-four inches from the ground to floor-board, and contains a drawer which holds twenty section crates. The roof, which is hinged, falls back, and is held in its place by two pieces of gird-iron, with a joint in each. The back part folds down and gives great freedom for manipulation. The inside contains three compartments, two of which hold sixteen frames each, placed across the entrance. The middle compartment holds three frames, and is placed end-on to the entrance. All the frames have 15½-inch top bars; the middle part can be used as a nucleus for breeding queens or holding an after-swarm. Three squares of glass set in a wood frame cover the tops of the frames, with two handles to each so as to lift them like a tray. Bee-space being left, the bees have freedom to pass between the glass and tops of the frames. At the rear of middle compartment is a space which holds about 10 lbs. of sugar; the three divisions have perforated tin on the side next this space, or hopper, and the bees take the sugar through the holes. The alighting board, perches, and sliding shutters are detachable, and are all on the south side. In the centre, communicating with nucleus, is a portico supported on two turned pillars. It has a mahogany panelled front door, with brass knob. I was going to add a brass rapper, a scraper, and a mat to wipe their feet on, but have not done it yet. It has 11 windows in it, with the blinds half drawn; it is spouted all round, and a conductor goes down into a drinking fountain, where the bees take the water. It is fancy painted; as it stands in the garden from the ground to the top of the chimneys it is 5 feet in height; it would look well on a grass lawn in front of a gentleman's house. I have a double swarm in one of the ends, and I am going to put a foreign variety into the other to see which does best, but I have not got them sent to me yet.—J. Smith, *Lowick, Northumberland.*

P.S.—I add there are two glass dummies set in a frame which close the bees in at the back, and a thermometer which gives the temperature.

[With this description we received two sketches: the hives would be very ornamental on a garden lawn.—Ed.]

LINCOLNSHIRE BEE-KEEPERS.

[1757.] A few weeks ago I received a letter from a leading bee-keeper in Lincolnshire asking if I could make arrangements for a new Association for the county, at the same time offered 5*l.* towards the expenses in aid of that object if I or any one in our neighbourhood would undertake the work of organization. I am pleased to say a gentleman of undoubted integrity has intimated that he will accept the post of Hon. Sec. *pro tem.*, and try to reorganize the Lincolnshire Bee-keepers' Association. I should be glad if former local secretaries would communicate with me, and any others, as to their willingness to assist in the undertaking. A meeting will be called shortly for the purpose of forming the Association. I shall hope to receive some suggestions from old friends with respect to the rules, &c.—H. O. Smith, *Eastgate, Louth.*

MISMANAGEMENT, &c. (1718.)

[1758.] 'Welsh Novice' is much mistaken in my disposition if he thinks I have any capacity for 'chuckle,' sardonic or otherwise, because of 'this detestable weather.' It is no satisfaction to me to know that others are equally with myself disappointed in the hundredweight returns per hive. He lumps my losses, &c., in the one word—mismanagement. Perhaps if I tell him how I *managed* last winter, he will be kind enough to tell me wherein or what constituted my mismanagement.

Forty-two hives of bees went into winter quarters with at least 25 lbs. or 30 lbs. of honey (not a drop of syrup). They were dry and well packed with quilts, horse-hair, chair-seating, thread and wool quilts, some two or more thicknesses of brown paper over that, and a chaff-frame over all. They so remained until Easter Monday. Being a very fine summer day, I overhauled the whole of my stocks, when I found some of them queenless, which I united to their next-door neighbour, some two or three all dead, with abundance of stores in all the frames, Two had died from dysentery. All young or second-year queens: I found but a very little brood in any of the hives. Seeing the frost and snow had cleared away, I began to stimulate with syrup, and some of the hives I took out the back frames, and with a flour-dredge well filled the cells with pea-flour. None died after this; but with all this some of the young queens are the weakest of my present number. Now, Mr. 'W. N.,' tell me where I mismanaged in any particular. The 'detestable weather' was not of my ordering. Surely 'W. N.' would not recommend me to have overhauled my stocks any time during that long winter of severe frost and snow.

'Amateur Expert' in his 'Jottings,' page 367, thinks I have overlooked in my calculations the question of *temperature*. If 'A. E.' will kindly refer to my article again he well find that my calculations are based on the higher temperature as per answers to inquirers, page 327. If I had taken the *lower* temperature it would have further taxed the laying power of the queen to one-third more, *i.e.*, from 1200 to 1800 per day, from April to June, without intermission, and then I have not allowed for any loss of life during that time, which would in the nature of things be very great.

In this week's issue of the *Journal* the writer in the first page evidently has me in his mind when he says, 'If only young queens were used, bred from selected mothers, we should not hear of any doubts being expressed about a queen keeping a hive of forty standard frames properly populated.' I have done this very thing, but still my queens have failed most lamentably, none of them have exceeded thirteen standard frames. Mine are all English bees; I have tried Ligurian swarms, but would not have another as a gift. I found them exceedingly prolific, perhaps they would cover forty frames, but after swarming twice (I had them June 8th or 10th), they even swarmed on the 8th of August, and at August 29th had not a single cell of honey sealed over, while the English bees had enough stores and to spare.

Perhaps our English bees are like horses, of very diverse breeds, some 'thoroughbred' and some only New Forest breed. Now, Mr. Editor, I would like to try some of those thoroughbreds if you, or some other good-natured gentleman, will send me a swarm to try.—Sherborne, *August 13th.*

A CORRECTION.

[1759.] 'Sherborne,' poor man, has enough to suffer without being held responsible for another's shortcomings. Mr. Blankley (1744) believed it was he ('Sherborne') who had desired the suppression of statements respecting large takes of honey. Someone else, in an earlier number, has spoken in deprecatory terms of the proposal. Sir, allow me to confess that this proposal came from me, and was intended to be humorous. In future, perhaps it would be advisable, when I venture into a little facetiousness, to acquaint the reader with the fact, and label it, 'This is a joke.' What say you, Mr. Blankley?—EAST GLAMORGAN.

FEEDING BACK EXTRACTED HONEY—CARBOLISED CLOTHS.

[1760.] For the last three or four years I have tried in a small way the system of completing unfinished sections by feeding back extracted honey, though not on such scientific lines as described in (1735). But I have found two great drawbacks. First, the waste alluded to by Mr. Hutchinson, which in my experience has been quite four or five pounds of extracted honey to one pound in the sections. But the second drawback has been greater, and I should like to know if others have found the same, and if there is any remedy, supposing the system really worth adopting. In almost every case the sections have been beautifully filled and sealed, though usually there is a perceptible difference in the sealing from that of first-hand filling. But after a short time the fed-back extracted honey has set quite hard, which the first-hand honey has kept liquid, so that the value of the section for use (and, I suppose, for sale, though I have never sold such sections), has been quite spoilt. As we usually keep the newly finished sections for home use, and comb-honey is much preferred to extracted, it has seemed a pity not to get the sections quite full; yet the result has been that I think we have spoilt our comb-honey, so that I decided to give up the system altogether.

With regard to carbolised cloths, to which 'Three scepties' were converted as sung by 'Neophyte' (p. 355), I have myself used them exclusively for some time, but I have given up the recipe given in 'Useful Hints' (p. 283) for what I find a simpler, quicker, and more effectual plan. I daresay others use it, and perhaps it has been mentioned already in the *B. B. J.*, but in case not I will describe it. This spring, being very busy and having none of the carbolic solution recommended in the *B. B. J.* by me, I wetted a bit of sponge with two or three drops of the agent sold by Mr. Webster for use in his fumigator, and smeared it over a piece of calico. I now use nothing else. I think it has several advantages over the solution. One smearing lasts for weeks, so there is no constant wetting and wringing out the cloth: being dry it does not leave a taint behind, which I have known the solution do if the cloth was not enough wrung out, and I find it more effectual with the bees. I have used the original piece of calico for over five months, sometimes day after day and from one hive to another, yet have only refreshed it twice, and once was a matter of extra precaution when I had thoroughly to ransack a very savage lot who usually care little for carbolised cloths. They were as quiet as lambs this time. I have now three such pieces of calico which I carry in my 'bee-basket' folded up in a cardboard box with the bit of sponge, so they are at hand at a minute's notice. The other day I was asked by a neighbour to drive a skep notorious for the savageness of its inmates which had quite beaten off another driver. While getting ready I put the bit of sponge into the doorway, and when I turned up the skep they were quite peaceable. The odd thing is that the queen does not seem to mind the smell, though the other bees bury their heads. When searching for her I keep one cloth over the unsearched combs and another over those that have been examined, and have several times found the queen walking quietly about laying eggs close up to the cloth. Carbolised cloths I find specially useful for uniting by alternating the frames. A cloth spread over each hive for a minute or two, makes the bees cling to the comb and bury their heads so that they can be put very quietly among the other bees; and when all are in, if the cloth is left on for another minute or two and then very quietly replaced by the quilt. I have known two very savage lots of hybrids united without loss of a bee, and apparently without either lot being conscious of the operation.—C. W., *Aug.* 4.

NOTES ON BEE-HIVES.—BEES, 1635 A.D.

1761.] The following quaint extract is taken out of a book entitled, *Speculum Mundi; or, A Glasse representing the Face of the World*, written by John Swan, M.A., 1635.

'*Bees.*—These be those winged workmen, which whether their profit or admiration be greater, I am scarce able to say. For they do not onely busily bestirre themselves to gather hony, which is very usefull in the life of man: but they do work it up in most strange manner, and keep it in their waxen cells so rarely built that all the men which the world affords are not able to do the like. Neither is this all: for they live so, as they may be true patterns of needful government, keeping themselves under the subjection of a king, and order of laws. They may well be likewise said to have the soveraignty and pre-eminence above all others of this kinde, because the rest come farre short of their perfections.

'It is a creature having foure wings, and bloudlesse, the onely crafts-master of honey. Their eyes are somewhat of a horny substance, hid deep in their bodies, as is also their stings: which when they lose they die:

Vitam in vulnere ponunt:

because their sting and entrails come away together. They want neither tongue nor teeth, and out of their short feet or stumps, there grew forth as it were two fingers, wherein they carry a little stone, for the poysing their bodies in stormy, windie, tempestuous weather; it being a great means to keep them from blowing away and losing their homes.

'Neither can it be denied but that by nature they are much different: for some (saith* one) are more domesticall and tame, and others again are altogether wilde, uplandish, and agrestiall. Those former are much delighted with the familiar friendship, custome, and company of men: but the other can in no wise brook or endure them, and therefore they keep their trade of honey-making in old trees, caves, and such like other holes.

'As for their breathing, I do not believe it; howbeit they may pant, move, or stirre (as the heart or brain doth) and by transpiration be comforted and made lively: for they be much refreshed by the aire which passeth through their divided places, insomuch that they alwayes use great diligence and care to preserve them from being stopped: for as soon as they be stopped in those passages, they die; as we see if at any time they chance to fall into oyl, or the like liquour, which may stop their pores.

'Some make three kings amongst them, differing in colour, as black, red, and divers coloured; but perhaps there is rather one king in a companie, the other like kings may be esteemed as viceroyes. In their breeding they actually couple together, after which they lay egs, sitting upon them for the space of five and fourtie dayes; then do they hatch their young ones, which at the first come forth much like to white worms, except the king, who only is said to be hatched with wings. And sometimes there is a kinde of bee bred out of putrefaction,

* Topsel in his *History of Serpents*.

as authors write. A rotten horse breedeth wasps; a dead calf bees, if the west winde blow; from an asse proceed humble bees; of a mule, hornets, &c. And whether the bees in Sampson's dead lion were bred anywhere else, no man knoweth.

'They have a commonwealth, and are governed by a king, as before was mentioned; and him they reverence and honour, being alwayes readie to do according to his pleasure. He is of bodie farre bigger than the honey bee, hath shorter wings, but a brighter and more goodly head than they. There is always excellent discipline, and very good government among them: for at the mouths of the hives there be some which stand like wardens placed at the gates of a castle, to see who goes in and out. And having rested quietly all night, there is one which with a humming noise doth call them up, whereupon they prepare to fly abroad about their businesse: but if they make no haste to look out, or go not farre from home, it is a certain signe of no good weather.

'When they be busie at their work, the bees which go abroad return home with laden thighs, full of the substance of the flowers: and this especially is said to be an office of the younger bees; for some of the others do onely carrie water: and the elder ones remaining at home, do busilie lay up, carefully dispose, and curiously dresse what the others bring in. Such as be sluggish among them, are diligently observed, and bitterly punished; and as for the drones, they are supposed by some to be the female bees, which they drive out of their hives when breeding time is past; and therefore they do ill who use to kill the drones before. Others again think that the female bee is no drone, but rather bred among the bees, and being idle, and unapt for work, is driven away either in the busiest time, or time of dearth. And yet perhaps it may be the female, which having done as much as can be naturally required from her, must not think much to be driven away, but leave her room to a succeeding generation.

'I said before that in the morning there is one among them which calls them up, and so in like manner at night they leave their buzzing by degrees, at last hearing as it were a proclamation through their hive to go to rest: and as the watch being appointed, and all things set in order, they all make themselves readie to go to bed. So long as the king liveth, so long the whole swarm enjoyeth the benefit of peace: but he being dead, there is great disorder. The king keepeth his court by himself, in the highest room and largest part of the whole palace, his lodging being very curiously made. And if at any time any of them chance to die, they be carried out of the hive, as it were upon the shoulders of the other bees, who will suffer nothing in their houses which may pollute them: but if they be onely sick then have they a medicinall aliment of honey drawn from annise, saffron, and hyacinths by which they are cured.—*Topsell.*

'And when they be readie to swarm, they dare not take their flight untill their king leade the way: unto whose side they strive to flie, as neare as they can. Some say, if the king be such as tenders the good of the other bees, he goes but seldom abroad: and stragling often from home, they will rid themselves of him. But when he dies through age, they carrie him forth in solemn manner and behave themselves as at some sad funerall. Neither is he so tied to his home but that he may sometimes go abroad to refresh his aged bodie, whom they accompanie in a sweet obedientiall manner; and if it chance that he grow wearie and faint by the way, they bear him back again upon their wings, and with great commiseration pitie his decayed estate. Moreover they will not suffer a dead bee to lie in their hives, but carrie him forth as to his buriall, lest he should corrupt their pure and cleanly decked dwellings.'—*Extracted by* T. Bonner Chambers, F.L.S., *Tref Eglwys, Caersws, Montgomeryshire.*

HONEY OF THE EUCALYPTUS.

[1762.] Only recently the valuable properties of a honey, received from Australia, have been determined. We have a specimen of it in its 'run' form, not unlike our own honey after being kept a year or two. It is not so dark as heather honey, but slightly darker than the flower honey. The taste, however, is very distinctly marked. Mixed with three parts of water, in which it is easily soluble, it has a peculiar resinous flavour: it is agreeable to the palate, the taste reminding one of the aroma in the air when passing in the spring-time the firs laden with their young cones. It will not do, however, for 'Athol Brose,' as we cannot get it to dissolve in alcohol. Some of our readers may not be aware that a very good cure for a cold, when taken in time, is this Scotch recipe, viz., equal quantities of honey and whisky stirred up together till the honey dissolves.

It was four years ago when the distinguished French naturalist, M. Guilmeth, was travelling in Australia that he made the discovery of the honey. He observed near the top of one of the eucalyptus trees a strange excrescence; on examining this with his field-glass, he noticed a vast army of small insects flying about, entering and leaving an opening in the tree. Struck with the unusual appearance, he got his men to cut down the tree. During this operation the insects came in deputations to see what the strange workmen were doing. M. Guilmeth was then convinced that the insects were small black bees. The workmen got their faces protected from the attacks of the bees, and the tree fell; the shock made the queen leave the hive inside the tree, accompanied by her faithful subjects. The hive was examined, and the honey, in considerable quantity, was found to be of such a peculiar flavour and sweetness, that M. Guilmeth sent home specimens of the honey and the bees to his friend. Dr. Caraman, at Forges, in Normandy, for analysis and examination.

Dr. Caraman submitted a report on the eucalyptus honey to the Academy of Medicine, Paris. The black bees were of a peculiar kind, unknown to any of the entomologists. The honey was found to contain 62 per cent of sugar: the active principles, *i.e.*, eucalyptol, eucalyptene, terpene, cymol, colouring, resinous and aromatic principles, 18 per cent. This large proportion of sugar and medicinal elements drew the attention of the medical *savants* to the importance of the honey in therapeutics. The oil of eucalyptus has been used for some time as a better anti-septic than carbolic acid, leaving no bad effects. The honey contains all the property of the oil; besides, on account of its sweetness and nutrient qualities, it has been recommended as an excellent substitute for cod-liver oil in wasting diseases.

M. Herrison, director of the Chevrier Laboratory in Paris, tried to manufacture the honey by mixing with common honey the essential properties of the eucalyptus. In this, however, he signally failed; the stirring could not control the separation and gradual volatilising of the essential ingredients. Accordingly, it is concluded that the resinous substance on the gum-tree, as this particular eucalyptus is familiarly called in Australia, requires to be digested by the bee before being fixed in the honey. We have studied the reports of the French medical press on the subject, and gone over a number of cases treated with this honey alone. We believe it will be found particularly useful in various diseases, as bronchitis, phthisis, &c.—Dr. M'Pherson, *Scottish Nights.*

Suggestion for Feeding Starving Stocks and Swarms at the present time.—Leave excluder-zinc on (or use strainer cloth) and pack upon it Demerara sugar. Also suitable for winter, and is very economical, as no feeders are required. I got this 'wrinkle' from a bee-keeper at the Nottingham Show. He says he feeds thus every winter, and he keeps forty colonies.—C. N. P.

Echoes from the Hives.

St. Wilfrid's, Parkstone, Aug. 5th.—Seeing by last week's *Journal* so many deplorable accounts of the honey harvest in most places, I thought I would just let you know that it is certainly a little more hopeful in this little corner, though, if the weather had been anything as all have wished, it would have been a great deal better still. I started this year with five bar-hives and one straw skep. I have taken from one bar-hive twenty-eight sections, and the bees are now working four crates of twenty-one each. I hope to have another twenty finished in a day or two. Two more bar-hives have got sixty-three sections nearly completed; the other two have forty-two each. They are all working hard, and if the weather will only be kind, the heather is nearly out in bloom. As you say in last week's 'Hints,' the bees have bred enormously this year. I had one of the best hives swarm on August 2nd, about 7 or 8 lbs. I returned them in the evening, and they have gone on quiet since. The skep swarmed twice, and I have stocked two more hives with them; the swarm is now working a crate of sections. What surprised me is how the bees have got honey at all; they must have made hay *while the sun did shine*. If the month of August would only be fine, I hope to get a good lot of heather sections. I have taken altogether fifty sections nicely filled, and hope to have another fifty this week.—A. Dabner.

Yoxford, August 9th.—A neighbour had a swarm of bees on 3rd of August. I have never before heard of one so late. My bees have been very strong in brood, but have done badly in storing honey. I have taken off but few filled sections, and the bees have not sufficient for winter supply. They are now very busy, limes and blackberries being in full bloom.—J. P.

North Leicestershire, August 13th.—The first three days of this month found the bees in full flight, but forage was scarce, and the results *nil*. The next three days totally blank, for bees remained at home. On the 7th and four following days a higher temperature (75 to 79°) set the nectar flowing in the white clover and limes, and as a consequence some stocks are showing a little (very little though) sealed comb. To-day is very windy, and the cold has returned, confining the bees to their hives.—E. B.

Navigation, Treharris, R. S. O., Glamorganshire, August 13th.—Seeing 'East Glamorgan's' experience in last week's *Journal*, and as I live close to Pontypridd, it made me feel a bit uneasy, so to-day I made time to examine one of my stocks. I have ten. I am pleased to say the first one I looked at, having on a rack of twenty-eight sections, was doing splendidly; all of them were worked out, full of honey, and the middle ones sealed. The frames also contained from two to four pounds of honey each, most of it sealed; after seeing this I felt satisfied, and did not think it worth while to open the other hives, as from all appearance they seemed to be doing equally as well. I may say that Mr. Gay, expert to the Glamorganshire B. K. A., started me in bee-keeping, and is the maker of the hives I am using; he has also had the entire management of them up till about a month ago. They are what he calls 'The Combination Hive,' and will hold seventeen or eighteen frames, and two racks of twenty-eight sections each. Should the weather continue good, I shall put on the other rack, which had been removed in consequence of bad weather, and dwindling down, or else extract from the frames. I am very glad to be able to give such a good report, and hope it will cheer 'East Glamorgan's' heart, as well as other bee-keepers. By the bye, I think 'East Glamorgan' rather premature in changing his *nom de plume*, as no one but a novice would attempt to heft or lift the frames to ascertain the weight without first removing the quilt. I hope you will be able to find room for this, my first Echo, in your very instructive *Journal*.—A. H. Sims.

North-east of Ireland, Aug. 7th.—It is a long time since there was a worse year for bee-keeping experienced in the north of Ireland. First we had a late, cold spring, and now we have been passing through a chilly, rainy summer. There has been little sunshine to bring forth nectar and pollen in the flowers, and though in some places there have been enough of swarms, they will have to be fed to secure them the requisite twenty-five pounds of stores against winter. There have been shows of honey at Belfast on June 21st in connexion with the North-east of Ireland Agricultural Association, at Armagh on July 4th, at Strabane on July 18th, and Banbridge on July 31st. But the entries were below those of former years, and many who had intended to exhibit were unable to do so when they went to their hives and found no sections ready; while, except at the latter place, there was not a properly finished section or super staged. Honey will not, this season, be the cheap drug it was in 1887. As an example of the difference between the yield of the two crops, I can instance a gentleman in Co. Down who, at this time last year, had secured eleven hundred sections, but he has no yet had one for 1888.—H. W. Lett.

Cork, August 8th.—Your readers, cosmopolites, in their desire to hear the latest accounts of the little busy bee, a word from the south of Ireland will then interest them. Had I written one week ago I should swell the buzz your several local correspondents raised about your ears when their one and only cry was a lament on the unreasonableness of 'Jupiter Pluvius.' It was here, in the south of Ireland as it was in the north and south of England, a mere apology for summer; and the little bee has just as hard a lot with us as it had in your readers' apiary—a lot which it patiently endured. However, during the past few days some kind friend of the bees has soothed the fierce wrath of the rainy god. The sun shines out brightly, and the flowers—such of them as remain—are daily expanding their leaves once again. Had the weather continued as it was a fortnight ago, 'the last rose of summer' would, indeed, by this time have faded and gone.—E. C. R.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

Gr. A. B.—*Honey.*—The sample of honey seems to us to be very good. There is an agreeable sharpness of flavour that we like. The bees may have worked rhubarb, but whatever it may be from the sample is good, and no doubt of its genuineness, we should say, need be entertained. Our correspondent may consider himself fortunate to have such produce. We hope he may have hundredweights of it.

A. W.—*Heather.*—No. 1 is the cross-leaved heath (*Erica Tetralix*), No. 2 is the common ling (*Calluna vulgaris*); both are excellent honey-secreting plants, perhaps the latter is the best. We trust that you will find the heather to be prolific in honey this year, as accounts from all parts indicate that other sources have been a total failure.

M. F. K.—1. *Carniolans v. Ligurians.*—Both of these varieties are very good workers, but the Carniolans are most easily handled—we prefer them to Ligurians. 2. *Carniolan Hybrids.*—We prefer the Carniolan queen crossed with the black drone. The first cross we

usually find superior to either parent. 3. *Queen-introduction.*—This does not seem quite settled; many bee-masters preferring the cage-introduction. We have recently had much success with direct introduction by the Pond-Simmins' method.

C. N. P.—1. *Larvæ thrown out.*—By feeding you will have stopped the mischief. Starvation was the cause of the abnormal proceedings in both cases. 2. *Forming Swarm with new Queen.*—You would have to cage the queen in nucleus. All the bees joining same will be old bees, and therefore more liable to ball the queen, but this does not take place in all cases. We should cage so as to be on the safe side.

W. Corkhill.—1. *Swarm without Queen.*—Introduce a fresh queen at once. She will raise brood this season which, as young bees, will be of great service through the winter. 2. *Foundation.*—The samples of foundation sent are very good and pure.

H. W. Lett.—Foul brood: *Bacillus alvei.*

E. J. Spiller.—*Dead Queen.*—This appears to be a fertile queen. It might, very probably, be the one you introduced, as the princess, being more lithe and active, would have the advantage in the contest, thus causing the old queen's death.

P. Tonkin.—*Ligurian Dead Queen.*—Probably there is another queen in the hive, as the one sent to us has had wings which have been roughly torn out. If on examination you find the hive queenless, you should introduce a fertile one at once. If you have drones you could raise one by giving the stock a frame of eggs from another hive. We consider her a pure Ligurian.

E. Weber.—*Microscopes.*—For extraordinary work we use a Beck's Class A stand. It is the best binocular microscope made by that firm. The objectives most useful are a $\frac{2}{3}$ inch and $\frac{1}{4}$ inch, and we think you would find a $1\frac{1}{2}$ inch useful. If you are going in for the study of Bacteria you will want a $\frac{1}{12}$ oil immersion, but great care should be exercised in the selection of this. We use one of Powell and Leland's, but such an objective cost 23*l.*; it was one of those that was given to Mr. Cheshire to carry on his investigations.—Yes, we have a $\frac{1}{25}$, but we seldom use it, and do not recommend you to get one. You can get a very fair $\frac{1}{12}$ of W. Baker, High Holborn, for about 5*l.* 5*s.*, and it is made by Leitz specially for such work. You will find that with practice you will be able to make dissections, but for this purpose we use a specially constructed microscope. This is called Stevenson's binocular dissecting microscope, and can also be had of Mr. Baker, the cost of stand being 8*l.* 10*s.* Working with this stand is much easier because the platform is large and level, and the tubes are inclined so that the operator can sit comfortably at his work. The objective can be raised or lowered by means of a rack-and-pinion movement, and it is suitable for the lowest as well as tolerably high powers. We cannot give general instructions for mounting, but if you will tell us what subjects you wish to work upon we shall be happy to give you particulars. All the necessary materials may be procured of Mr. Baker. If you will say to what sum you wish to go we will advise as to apparatus most suitable.

John Perry.—1. *Nucleus Hives.*—Your method of forming nuclei has been tried and found to be of little utility, as during winter the disturbance of one nucleus communicates itself to the rest, so that there is a continual commotion during the time that perfect quietude should reign. Thin boards instead of perforated zinc are much better; we always use $\frac{1}{2}$-inch stuff in the same manner as you propose using zinc. 2. *Two Queens in a Hive.*—Your bees would be in a much better condition if you ran two hives of ten frames each, as one queen, if she is any good, can well fill that number of combs. To restrict a queen to only five frames would be very bad bee-keeping, as one-half, at least, of her eggs would be consumed by the bees. A hive having a good prolific queen will be more successful than one having two queens separated as you propose, by a zinc diaphragm; it has been tried frequently.

M. J. Swift.—*Candy-making.*—If you carry out the instructions given at pages 161 and 162 of our *Guide Book* you cannot fail. Boiling up the sugar is not sufficient, but it must be continued until it is of the right consistence. Wheat-flour should be used and not wheat-meal, as the bees can make no use of the bran and coarse particles. When the flour is put in the mixture must be stirred until it thickens, and then pour it out. The quantity is one and a half pound, as stated, not one half pound.

C. Cox.—*Last year's Honey.*—Our reply last week was dictated from our experience with, and our knowledge of, the rules of the B. B. K. A. We have no desire to enter further into the points of contention. We consider that the officers of the Association with which you are connected are sufficiently equal to the determination of the matter in dispute.

E. C. R.—1. *Situation of Apiary.*—The situation chosen is very suitable. Protection from the north wind can always be given during the winter by erecting hurdles made in a similar manner to those used for the protection of sheep during the lambing season.—2. *Flowers to plant in Garden.*—Early spring flowers are the most suitable, as later in the season there are plenty of wild ones. Crocuses, White Arabis, Wall-flowers and Snowdrops are the best.

G. M. Thompson.—1. *Sugar in Honey.*—To absolutely settle this point would require the assistance of a very expensive instrument called a polariscope, which we should think the purchase of same would hardly be warranted by its use to you. 2. *Cane and Beet Sugar.*—There are several descriptions of sugars in which beet is never used, of which the following are the best: Demerara (not Lyle's coloured, which is frequently sold as such), Barbadoes and Porto Rico; these are called raw sugars. The manufactured pure cane sugars are Tate's and Martineau's cubes (first quality) Granulated (when branded on barrels 'Free from Beet,') and large crystals (coffee sugar). The methods employed in analysing sugar and honey would occupy every column, and more, of one issue of this *Journal.*

Gilbert King.—*Bombus lapidarius.*—The large size of your specimen indicates that it is a female, or in apiarian language a 'queen' humble-bee.

Amateur.—*Old Bees.*—A hive is said to consist of old bees only when it has been without brood for a few weeks, either through the queen's inability to lay or through the loss of the queen. We much prefer to introduce the new queen within an hour or two of the removal of the old one.

Oxfordshire.—1. *Failing to introduce Queen.*—We cannot see why you should have failed with the plan you adopted: try again. 2. *Fecundation.*—You cannot secure pure fecundation of your Ligurian queens, unless you have none but pure Ligurian drones around. Your only plan is to get a pure Ligurian queen ready fertilised.

Buzz.—1. *Price of Honey.*—This is quite as much a question of quality and get up as scarcity, still the price *ought* to be higher this season, but up to the present we have had no general quotations. 2. *Feeding.*—When syrup is recommended between the honey-flows, as in a bad season like this, it is intended to give not more than a quarter of a pint in the evening, with only one hole open, then the bees will consume and

not store it. This cautious feeding is a great factor in successful management in our shifty weather.

HENRY STUART.—*Weak Stocks.*—Unite the two weak lots at once.

AN IGNORANT BEE.—1. *Stores for Winter.*—About 30 pounds *sealed*. 2. *Feeding for Winter.*—About end of August. 3. *Functions of Antennæ.*—This is a very debateable point, as you will see by reference to our back numbers. 4. *Finding Queen.*—The queen-bee has ofttimes a way of avoiding the common gaze. 5. *Drones.*—If you have no drone-comb you cannot have drones. Nowadays bee-keepers avoid raising drones except when specially required. 6. *Peculiar Odour.*—Probably this is the smell of new brood, something like fresh killed meat. If you still think it is foul brood send a piece of the capped brood. 7. *Extending Brood Nest.*—Under the circumstances do as you suggest. 8. *Surplus Honey.*—Do not expect any section honey now this year.

*** *Letter from Secretary of Irish B.K.A. in our next.*

SHOWS TO COME.

August 22 & 23.—Shrewsbury. Hon. Secretary, W. G. Preece. Entries close August 15th.

August 29 & 30.—Derbyshire Show at Derby. Hon. Secretary, W. T. Atkins, 6 North Street, Derby.

September 5 & 6.—Surrey. Hon. Secretary, Captain Campbell. Entries close August 30.

September 5–7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 15th.

Business Directory.

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HOWARD, J. H., Holme, Peterborough.
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SIMMINS' Bee Company, Limtd., Rottingdean, near Brighton.

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On WEDNESDAY and THURSDAY, 5th and 6th SEPTEMBER, 1888.

Prize List, Entry Forms, and applications for space for Exhibits must be made before 25th of August to the Honorary Secretary,

Capt. C. D. CAMPBELL, Box Grove Road, Guildford.

ENTRIES CLOSE on 30th AUGUST.

THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

[No. 322. VOL. XVI.] AUGUST 23, 1888. [PUBLISHED WEEKLY.]

Editorial, Notices, &c.

TO BEE-KEEPERS.

The Secretary of the British Bee-keepers' Association has been applied to for information as to where comb-honey in sections can be purchased. Bee-keepers having such on hand are requested to communicate with him. Address, J. Huckle, Kings Langley, Herts.

INTERNATIONAL EXHIBITION OF BEE CULTURE AT BRUSSELS.

Our Special Correspondent at Brussels writes:—

In my last I mentioned that the Exhibition was opened on Saturday 11th. It will be well to describe the arrangement of the Exhibition as it differs from anything we have had in England. Mr. T. Vernieuwe, the active and energetic secretary, to whose untiring efforts the success of the show is due, had intended to visit the Royal Show at Nottingham, but being unable to get there went to the Essex Show at Ilford. This, of course, being small did not give him such complete ideas as he would have obtained at the Royal Show. The whole of the entries of each exhibitor are here classed together, so that if the exhibitor has made a large number of entries we see live bees, moveable comb hives, fixed comb hives, extractors, comb honey, extracted honey, wax, comb foundation, and hydromel, all grouped together on one table. The only advantage is that, as a special prize is awarded for the best of these exhibits, the judges are enabled to decide much more easily than if they were spread about in various classes. However, it is not at all easy to compare the particular articles of one maker with those of another, and it is here that our method of classification shows its great advantage. I have had considerable discussion with the Secretary on this and other points, and in Belgium I think our system of classification will in future be adopted.

The only exception in the whole show was with the collections of appliances, which were arranged in a separate building, and for which the grand prizes of 150 and 100 francs were offered, showing that here at least some encouragement is held out to the manufacturer, who, as a rule, makes the success of the show, but who, now-a-days, is a little apt to be scurvily treated—at least some think they are.

The prize list was as under:—

Class 1.—*Living Bees.*—1st Section. The most complete collection of various races of bees—black and hybrid excluded.—First prize, Gold Gilt Medal and 75 francs; Second prize, Silver Medal and 50 francs. 2nd Section.—The best and strongest stock of black bees in hive.—First prize, Silver Medal and 25 francs; Second prize, Bronze Medal and ten francs.

Class 2.—*Bee Hives.*—3rd Section. Moveable comb hives. For the hive invented or perfected by the exhibitor the best adapted for the welfare of the stocks.—First prize, Silver Medal and 50 francs; Second prize, Bronze Medal and 30 francs. Note. The prizes are increased by 15 francs if the hive shown contain a colony of bees. 4th Section.—Hives with fixed or semi-fixed combs.—First prize, Silver Medal and 30 francs; Second prize, Bronze Medal and 20 francs. 5th Section.—The hive best adapted for study and observation.—Prize, Silver Medal and 25 francs.

Class 3.—*Instruments.*—6th Section. The most complete and practical collection of appliances (included in any of the classes except Section 17.)—First prize, Gold Gilt Medal and 50 francs; Second prize, Silver Medal and 40 francs; Third prize, Bronze Medal and 30 francs. 7th Section.—Extractors.—First prize, Silver Medal and 50 francs; Second prize, Bronze Medal and 25 francs.

Class 4.—*Products of Bees.*—8th Section. Extracted honey.—First prize, Gold Gilt Medal and 30 francs; Second prize, Silver Medal and 30 francs; Third prize, Bronze Medal and 25 francs; Fourth prize, Bronze Medal and 20 francs; Fifth prize, Bronze Medal and 15 francs. 9th Section. Honey in comb.—First prize, Gold Gilt Medal and 30 francs; Second prize, Silver Medal and 30 francs; Third prize, Bronze Medal and 25 francs; Fourth prize, Bronze Medal and 20 francs; Fifth prize, Bronze Medal and 15 francs. 10th Section. Wax.—First prize, Gold Gilt Medal and 30 francs; Second prize, Silver Medal and 20 francs; Third prize, Bronze Medal and 10 francs. 11th Section. Comb Foundation.—First prize, Silver Medal and 20 francs; Second prize, Bronze Medal and ten francs. 12th Section. Mead or Hydromel.—First prize, Silver Medal; Second prize, Bronze Medal. Other preparations and drinks made from honey are admitted in this class.

Class 5.—*Bee Plants.*—13th Section. First prize, Silver Medal; Second prize, Bronze Medal. 14th Section. Collection of animals, birds, reptiles, &c., that prey on Bees.—First prize, Silver Medal; Second prize, Bronze Medal. 15th Section. Books and Writings, &c., on Bee-culture.—First prize, Silver Medal; Second prize, Bronze Medal. 16th Section. Synoptical tables and other objects for instruction in Bee-culture.—First prize, Silver Medal; Second prize, Bronze Medal.

Special Class.—17th Section. The most complete and meritorious collection of objects of use in Bee-culture.—First prize, 150 francs; Second prize, 100 francs.

The following comprised the jury:—Mr. Parpaite, of Carignan (President); Mr. Bridoux, of Cornimont; Mr. Burvenich, of Ghent; Mr. Castaigne, of Enghien; Mr. De Kesel, of Amougies; Mr. Laurent, of Vilvorde; Mr. Stilmont, of Bovigny.

In the 1st section for the best collection of races of bees, with the exception of blacks and hybrids, Mr. Sioi, of Herstal, carried off the 1st prize with Syrians, Cyprians, Italians, in large straw skeps, and Carniolans in the usual box of that country. The Cyprians and

Syrians were, I think, a little doubtful, and this opinion was shared by the judges as far as regarded the Syrians. The 2nd prize was divided between Mr. T. B. Blow and Mr. Vloebergh, of Brussels, each getting a silver medal and twenty francs. Both Mr. Blow and Mr. Vloebergh showed Italians and Carniolans, the former exhibitor in his well-known observatory hives. Mr. Louis, secretary of the Charleroi Bee-keepers' Association, took a prize of silver medal and eleven francs for the same races of bees.

There being a large number of exhibitors in this class the following extra prizes were awarded:—

Gold Gilt Medal to Mr. Ambrozic, of Mastraina (Austro-Hungary) for Carniolan bees; also to Madame Chinni, of Praduro è Sasso, Italy, for Italian bees. Silver Medals to Bonachi & Co., Bologna; Lucio Paglia, Bologna, and Mr. Varlet, of Petit Rœulx les Nivelles.

With the exception of Mr. Ambrozic none of the queen-raisers were present, and the extra prizes awarded may be to them some sort of compensation for the loss of their bees. They were mostly packed in small boxes with arrangements for flight, and the fate that overtook most of them when opened for flying in the vicinity of dozens of very strong stocks and skeps may be easily imagined. Those not exterminated by robbing will be killed by the extreme cold that prevails to-day, and it was good of the judges to give some reward for their enterprise in sending so far. Mr. Ambrozic is a well-known queen-raiser; and it is unfortunate that, owing to his speaking only German, he is unable either to impart or receive much information. No doubt if our English judges were to reward more liberally the foreign queen-raisers they would doubtless appear oftener at our English shows, where at present they are quite conspicuous by their absence, not one having now exhibited for some years.

In the 2nd section for black bees there is hardly anything worth of remark, the 1st prize being taken by Mr. Vloebergh for a stock, in what we should consider a most awkward bar-frame hive. It is a box with a sloping hinged lid with sides projecting above the bars—said bars being about eighteen inches deep by top bar twelve inches. The 2nd prize is taken by Mr. Croquet, of Malhelen, for a stock in the dome top skep with entrance about mid-way between top and bottom, the form in common use in these parts. A medal in silver is given to Mr. Houdart, of Paturages, for a stock made of four shallow tiers of straw rings hooked together—having bars only at the top of each ring—the whole presenting something of the appearance of a Stewarton hive, only in straw. Over sixty stocks and nuclei of bees were exhibited in the foregoing classes, and the confusion that prevailed when these were opened on the first day of the Show may be imagined. They were stood in two long lines quite close together, and the hives in which the bees were located varied from the French polished observatory hives of Mr. Bèdè and Mr. Blow, through the box and bar-frame hive and straw skeps to the humble beer-barrel with the bung-hole made use of as an entrance. A photograph of the whole would have been an interesting souvenir.

In section 3rd, for moveable comb hives, there was great diversity. Mr. Blow taking a bronze medal and thirty francs for a two-storeyed ten-frame hive with arrangements for supering. Mr. Blow had three similar hives in this class, and the fact that they were appreciated is shown by their sale immediately the judging was concluded.

Prizes of encouragement of a Bronze Medal and twenty-five francs were awarded to Mr. Branequart of Braine-le-Comte, also to Mr. Defruytier of Amougies. Mr. Branequart's hive is on English lines, and is well made of 1-inch wood throughout, with two bodies holding ten bars each and a lift, presumably for supering, though no super is shown. It is a practical hive, but the price seems unduly high—twenty-five francs, and it is only what would be shown at an English show for 10*s.* 6*d.* at most; hives with far more work in them have often been shown at that price.

Mr. Defruytier's hive is on the De Kesel system, and consists of two storeys built together, each containing about twelve Langstroth bar-frames. It opens at the side, and is, of course, manipulated with the aid of tongs. Of its sort it is the best in the show. Adjoining are others on the same system, but with the outside walls of straw.

Among the non-prize-takers, No. 19, by Mr. Daumerie of Anserœul, is a most conspicuous structure of three storeys, altogether about seven feet in height and roofed like a house. The storeys are filled with narrow, deep frames, and hive opens at side, and is manipulated with tongs. No. 24, by Mr. Dubois, secretary of the Trazegnies Bee-keepers' Association, is built on the lines of the Cowan hive, and is most solidly constructed; in fact, there is unnecessary labour in the dovetailing of the sides, &c. It is altogether a good hive, and is clear varnished, thus showing off its workmanship.

The hive of Mr. Varlet has English standard frames, and is a thoroughly practical hive. There are a number of little devices of Mr. Varlet's invention attached to it, showing him to be quite an advanced bee-keeper.

Section 4: Hives with fixed, or semi-fixed combs. The hives in this class are mostly straw skeps and their modifications. The Silver Medal goes to Mr. Blow for a fine Pettigrew skep willow-bound. The 2nd prize is shared equally by Mr. Desbuissons of Haybes and Mr. Bèdè of Mouroux. The hive of Mr. Desbuissons is like an American cheese-box, with bar-frames arranged inside; a straw hackle covers the whole, and the hackle has a wood framework inside under which a super can be placed. The hive of l'Abbé Bèdè is a shallow skep with bars only at top, and is furnished with a super-box containing American sections. The non-prize-takers in this class show mostly skeps, pure and simple, from the shallow skep to the one three feet high, often having the top detachable and forming a lid, which is luted on with clay. Others are of a series of straw rings, piled up one upon the other to an indefinite height. The neatest thing in this class is No. 30, from Mr. Froissard of Annecy. It is a straw skep and super of beautiful workmanship, and reminds one much of the lovely skeps that were shown some years ago at Kensington by Valerian Novitsky.

In Section 5 we think that the prizes were very badly awarded. The hives taking the prizes were simply boxes with glass sides, and we are of opinion that the judges cannot have had much experience with observatory hives. The unicomb hive of Mr. l'Abbé Bèdè, or the smaller unicomb of Mr. Blow, were undoubtedly the best shown. Mr. Blow's hive was out of the running through not being furnished with bees, but Mr. Bèdè's hive was well stocked, and should have taken 1st prize. Mr. Lessens of Ledeberg took 1st prize, and a Silver Medal was awarded to Mr. Defruytier for a hive for production and observation which we consider was perfectly useless for both purposes.

In Section 6 (Instruments) this comprises all the goods that are staged together by each exhibitor (the special class 17 which answers to our 'collection' being excluded).

There was no doubt from the moment of staging that the British manufacturer would carry off this prize. Mr. Blow, who is an old hand at collections, staged his goods in a most artistic manner; and the gold gilt medal and fifty francs were awarded to him. The following goods composed the exhibit:—Honey in sections, honey in bottle, six boxes of foundation, three bottles hydromel, three bar-frame hives, two stocks of bees in observatory hive, one empty ditto, one extractor, 100 cakes of wax.

The space allotted was facing the entrance of the building, and the effect on entering was very pleasing.

Mr. Buffenoir, of Leugnies, took the 2nd prize with a very small collection of articles; and we really think that Mr. Vloebergh, who took the 3rd prize, should have ranked higher, as he had a very creditable collection—an extractor composed of two Little Wonders on a staff in a frame moved by a handle at top, a cabinet containing a large assortment of various small appliances. Honey in comb and bottles. Hydromel—some in a very good patent stoppered bottle, and the necessary utensils for making hydromel; some very fine cakes of wax and the moulds in which they were cast. The enamelled iron moulds struck us as being particularly suitable as they leave the surface of the wax very smooth and bright.

The non-prize-taking exhibits in this class are not of such interest as to merit detailed notice.

In Section 7 (Extractors) nine were shown, and the majority of them were very practical instruments, most of them actuated by bevil cog gearing on a bar across top. They were all very large, suitable for the very biggest frames, the largest being nearly three feet in diameter. The 1st prize was withheld; the 2nd prize going to M. l'Abbé Bèdè for a very strong and serviceable-looking extractor, taking bars about 18 × 11.

A special silver medal was awarded to M. Bridoux, of Cornimont, for an unusually strong extractor, weighing over 1 cwt., having large bevil cog gearing on a top bar fastened with thumb-screw at end—the form so much used in England just now. The cages were about 26 × 15, and every part was well turned up, and had evidently been fitted by a practical engineer. Price not stated. In all the extractors very little space is left below the cages and no taps are used, a vessel being put under the spout to receive the honey.

In Section 7 (Extracted Honey) the quantity staged was very small owing to the bad weather that has prevailed in these parts.

M. l'Abbé Varlet, to whom the 1st prize was awarded, had by far the best collection. It was good in quality, and about 1 cwt. was staged. Most of it was of last year's crop, and it was packed in bottles of the well-known Abbott pattern, the size being one kilo and half kilo. A few screw-top, tall bottles of this year's honey were included. The month in which the honey was collected was stated, also the flowers from which it was gathered. M. Varlet evidently ranks high as a practical bee-keeper in Belgium.

Mr. Charlochet, of Lezinnes, took 2nd prize with six glass pots (with lids of the same material) of very pretty design. The honey was crystallised and quite white. The flavour was very fine. It was stated to be collected from sainfoin, but the flavour and appearance were certainly different from what we class as sainfoin honey in England.

The 3rd prize was taken by Mr. Barteaux, of Jagny-sur-Meuse, and we think he should have ranked higher, for he had a very pretty collection of very fine honey. The pots, too, were of good size and shape, and the method of fastening by means of a slot and a projection which tightened the neck of the bottle against an indiarubber band was ingenious and interesting on account of the same kind of fastening being claimed in England by two or three people: it shows that persons in quite different places may think out the same thing.

M. l'Abbé Bèdè took the 4th prize with a very varied collection of honey, mostly in the well-known one-pound screw-top bottles. His cherry and plum blossom honey was the most distinct and finest of this sort we ever tasted. M. Bèdè takes a high place among bee-keepers, as he has done much to apply honey in its various forms of drinks, of which we shall speak later.

The 5th prize was carried off by Mr. Kurmer, of Montherod, with Swiss honey.

We think that the honey of Mr. Froissard, of Annecy, should not have been passed, as it would be very difficult to find its equal in quality and appearance.

Mentions honourables and medals were made to Messrs. Gendarme, Wantot, and Garani, Bonaghi, & Co.

In Section 9 (Comb-honey) the show is very poor, and both the Belgians and the Continental bee-keepers generally have everything to learn in the way of obtaining sectional comb-honey. The exhibits are altogether primitive, there not being fifty sections on show, while the other forms of comb honey range from pieces of comb, pure and simple, to bars and little boxes, a few inches square, containing three or four combs.

The 1st prize was easily carried off by Mr. Blow with about twenty 1-lb. sections, in metal cases got up in very neat style.

The 2nd prize went to M. Henrion, of Altlinster, with four small bars, three boxes about 9 × 9 × 4 ins., with combs built without guides, and a very creditably worked name HENRION. We expect this name got him the prize.

M. Barteaux took 3rd prize with twelve 1-lb. sections not well finished. Messrs. Vallon and Bertrand took 4th prize with some of the best finished 2-lb. sections that we have seen this year. The sections were lace-papered and glazed, then enclosed in boxes made of veneer, mahogany, or cedar, with a photograph of the apiary of the exhibitor, and were altogether most attractive, and, in fact, we think they should have taken 2nd prize. Some consideration, however, may have been taken in the fact that they were produced in the department of the Haute Loire, where conditions have probably been much more favourable than further north.

Mr. Froissard of Annecy takes 5th prize with six 2-lb sections, the honey being of a very tempting appearance.

A special bronze medal and mention honourable are given to Mr. Kurnsner for two very good 2-lb. sections.

In section 10 (Wax), the quality of the wax is far above what we are accustomed to see at our English shows, and I judge that a great deal is obtained by means of the 'Solar Wax Extractor'—the worst samples here being about equal to the best we are accustomed to see—the colour being especially bright and clear, great freedom from pollen, &c. I think that our method of melting time after time with hot water has much to do with it, and the only English exhibit here, the one that took the 1st prize at Nottingham, and was there so much admired, was altogether passed, and deservedly so, by the judges.

Messrs. Vallon and Bertrand took the 1st prize for some fine bars of deep-red wax. The 2nd prize wax of Mr. Wantot, of Mellery, was very clear and even throughout, though the smell was peculiar. The 3rd prize went to Garani, Bonaghi, & Co. for Italian wax, which we thought was very ordinary.

We think that the very finest samples were passed, No. 27, No. 30, and No. 62, being, according to our ideas, very fine indeed, though in one case small in quantity.

In section 11 (Foundation), Mr. Robert Denis, of Vendhuille, took 1st prize for very fine brood foundation of the Dunham pattern. We have never seen finer. However his super would have been entirely passed by an English judge. It was of poor colour, not well made, and over thick.

The 2nd prize was secured by Mr. M. Ambrozic also for Dunham foundation, but not nearly equal to the last.

A mention honourable and bronze medal were given to Mr. Blow for three boxes brood, and three boxes super foundation.

Evidently the deep cell wall foundation is much appreciated on the Continent, though it has failed to secure much favour in England.

In Section 12 (Hydromel and allied drinks) we come to a portion of the Exhibition in which we Britishers have much to learn. It seems that in France when a

bee-keeper cannot sell his honey he converts it into hydromel, mead, or some such drink. It can also be made into *Eau-de-Vie* of honey. This seems such an important opening, that I would advise all British bee-keepers who desire information, to obtain the little book written by J. B. Leriche, of Amiens, which gives very full particulars.

The leader in this particular line at the exhibition is M. l'Abbé Bèdè, whose exhibit of the various drinks made from honey is most interesting; and I can also testify to their good taste. They comprise Hydromel, Champagne Hydromel, Sweet Hydromel for ladies, *Eau de Vie* of Honey, Honey Alcohol, Honey Vinegar, &c., &c., and they richly deserve the 1st prize that has been awarded to them. The other prize-takers for Hydromel only are, 2nd, Mr. Buffenoir; 3rd, Mr. Tillier; 4th, Mr. Barteaux; 5th, Mr. Kursner. These exhibits are all very good, but the taste here is for a sweet and strong drink, whereas in England we should prefer a dry.

In section 13 (Honey Plants and Seeds) an equal 2nd prize is awarded to Messrs. Buffenoir and Von Campanhout; the 1st being withheld. These were nice little collections, but nothing to compare with the fine show of bee plants that Mr. Abbott had at the Royal.

In section 14, Dr. W. Eben took the 1st prize for his collection of bee enemies.

In section 15 (Bee Books, &c.) the awards were reserved.

In section 16 (Synoptical Tables and other objects serving to the knowledge of bee-culture) the 1st prize only was awarded, and that to Mr. Van Nerom, of Brussels.

The grand prize of the show was, of course, that of that of section 17, and it was carried off quite easily by Mr. T. B. Blow; the prize was 150 francs. So far was his collection ahead of the rest that the 2nd prize was not awarded. Prizes of encouragement, however, were given, each of thirty francs, to Messrs. Wantot, Nicholas, Leesens and Gendarme.

Special prizes were also awarded to Mr. Bridoux (gold gilt medal) for his hives; Mr. Eben (silver medal) for objects tending to advance the knowledge of bee-culture.

A series of conferences were held: on Wednesday, 15th August, when Dr. Eben gave an address in Flemish. On Thursday, 16th August, when M. l'Abbé Varlet gave an address in French. On Sunday, 19th August, when M. l'Abbé Bèdè, pasteur of Mouroux, gave an address in French. On 21st August, M. Karll de Kesel, in French, 10 a.m.; in Flemish, 2 p.m.

M. Vernieuwe was ably seconded in his efforts to make the exhibition a success by his coadjutor M. Schlim.

IRISH BEE-KEEPERS' ASSOCIATION.

A course of lectures on bee-keeping was given by this Association in their bee tent at the Horse Show held at Hollymount, co. Mayo, on 7th inst., Mr. M. H. Read, a member of the committee, kindly giving his services as lecturer. Wet weather in the morning, and the interest taken in the horse-jumping contest during the afternoon, caused the audiences at the bee tent to be rather small. Three lectures were delivered, in which the lecturer, after giving a sketch of the natural history of the honey bee, and its bearing on bee-keeping, explained the advantages of the modern over the old method of bee-culture. He showed how easily bees may be handled and overhauled in the frame-hive, how completely they are under the bee-master's control, and what a much larger harvest of honey can be obtained, illustrating this from his own experience. He also showed and explained the various appliances used in bee-keeping, and extracted some combs of honey, besides giving general directions for the management of bees at the different seasons of the year.

AMONGST THE CO-OPERATORS ONCE MORE.

The Co-operators were *en fête* on Saturday the 18th inst. at the Crystal Palace. The comparatively small and thinly attended affair of last year at the gardens of the Royal Horticultural Society, South Kensington, has grown into a gathering of the colossal proportions of last Saturday. Excursion trains brought co-operators from all parts, and amongst the crowds could be distinguished the dialects of the Scotch, Yorkshire, and Lancashire, as well as the Midland and home counties. In fact the throngs were decidedly 'from the country,' the Cockney element and manners being very sparse. There were the usual round of Crystal Palace sports and attractions; races, balloon, bands, organ recitals, and a choir of 4000 co-operators.

The exhibition of flowers, fruits, and vegetables, was large, and the specimens exhibited remarkably good. The bee-tent was there, as I had ventured to express a hope it would be, and so was friend Baldwin, who was not only 'Expert-in-Chief,' but also one of the stewards of the show, he being a *bona-fide* co-operator. The bee-tent on Saturday did look 'bright, spick and span,' it was minus the flag, but that was because the tent was the property of a foremost County Association, and not our august B.B.K.A. Unfortunately it was fixed away in an obscure corner of the grounds where few managed to find it, which was a great trial to Mr. Baldwin as well as a loss of revenue to the Association. The bell was rung and every effort made to attract the crowds, but they invariably filed off into the Wurtemburg Gallery instead of going out into the open ground where the bee-tent was fixed. Eventually Mr. Baldwin carried a swarm around a portion of the grounds on his hat, which had the desired effect of gathering about 100 persons to see his last display. But a few displayed such interest in his manipulations that they attended each lecture, paying for admission each time.

The honey exhibits were staged at one end of the great centre transept of the Palace and were the centre of a large amount of public interest. The widely prevalent complaint of a bad season had led us to expect a very meagre show, but we were agreeably surprised to find not only a large quantity, but the quality was remarkably fine throughout. Several of the exhibits, although successful in winning prizes at the local shows, failed to score when brought here to compete with others which were superior. The work of the judges, Mr. T. W. Cowan, our esteemed editor, and the Rev. Dr. Bartrum, was by no means a light one; and I am pleased to record the fact that I neither saw cause myself, nor heard a single complaint as to the wisdom of their awards.

The competition for the 'Trophy' prizes and medals brought together a very large and beautiful lot of honey. Mr. Baldwin's trophy, which won the first prize, exciting the admiration of all; and when it came to awarding the fifth prize in this class the judges placed two exhibits level and Mr. Cowan gave an extra prize himself to Mr. John D. McNally's very nice exhibit, which was chiefly composed of honey strongly flavoured with heather, but dark in colour by comparison with the other exhibits.

The classes for twelve 1-lb. sections and twelve 1-lb. bottles of run-honey were extremely large ones and of exceptionally good quality; in fact, there was not a single exhibit on these two stages but what was a credit to their owners.

In the classes for not less than 2 lbs. of comb-honey and 2 lbs. of run ditto—classes evidently meant to encourage small bee-keepers—the judges rightly preferred *quality* to *quantity*. Amongst the prize-winners in both these classes we were pleased to notice the name of Miss Jeanie McNally, who is a youthful lady true to the bee-keeping instincts of her clan; her exhibits of both comb and run honey were good and well merited the distinction they received. There were one dozen 1-lb. sections staged

in this class which were evidently owned by a bee-keeper with small regard to tidiness and cleanliness. The wood of the sections was dirty and bedaubed with propolis, which rendered them conspicuous when placed side by side with others that were beautifully clean and white. The class for wax was well filled. Mr. John D. McNally won the first prize for three blocks of 'white' wax. Strictly speaking, they were not white of course, but a very pale straw colour; but if made into thin super-foundation, the latter would certainly look *white*, as commonly understood in the wax trade. In contrast to this sample and as bearing on the recent discussion in the *Journal* on the colour of wax, Mr. Woodley's exhibit attracted our attention, his sample being an orange-red colour, and evidently made when his bees were working sainfoin clover.

There was also a class for 'honey in applied forms,' which contained samples of Mead, which, being told, were capable of lifting the top off one's skull, I declined to sample. The honey vinegar was very good, and the honey tarts looked so. Mr. Moyle was the largest exhibitor in this class, his exhibit being a miscellaneous one of bread, cakes, biscuits, aerated waters, dentifrice, furniture-polish, and—no, not dubbin—but wax medals and models, which gained him the first prize.

I had nearly forgotten to mention the bell-glass supers which were well filled with pearly white comb honey, an enormous wasp's nest, a device loyal and well worked in comb-honey 'God bless our Queen,' and a glass model of the mission church at Welling, Kent, which was filled on a skep and looked very nice indeed. The owner of the latter, Mr. T. Freeman, we found lamenting the loss of his other exhibits of honey, which, we fear, were stolen before he had an opportunity of staging them. Mr. Baldwin had also a neat little collection of appliances which were not for competition. He was the only appliance manufacturer represented this year.

There were a goodly number of bee-keepers present. The 'Chief' himself had hurried there from Switzerland, and looked remarkably well. Dr. Bartrum also, who was compelled to leave early to get home in good time to attend to his pastoral duties. There, too, was the 'Sage,' who produced his copy of Holy Writ in Lowland Scotch dialect to prove his Scottish birth. Mr. John D. McNally had come all the way from Glasgow to attend, and there were to be found Mr. J. M. Hooker, Mr. Woodley, as well as 'Woodleigh,' and a host of others who were co-operators as well as bee-keepers.

We should liked to have seen a few honey merchants present as buyers, as several would have taken low prices in preference to carrying their honey home again and risk breakage. The co-operators may be congratulated on having so many able bee-keepers amongst their numbers, and such a good display of honey as a part of their fête; and the exhibition proves the amount of success that has attended the labours of the B. B. K. A., which has made it possible to gather a honey show of such magnitude, after such a bad season, by a society whose sphere a short time ago had no idea of including bee-keeping amongst its operations.

Old Sol was good to us on Saturday afternoon in contrast to the few previous days, and made the weather fairly enjoyable, and the mass meeting on the terrace possible to a class of enthusiasts who take even their pleasures soberly, and helped to make it enjoyable, too, to —Amateur Expert.

The following is the list of awards:—

190.—Comb and extracted honey arranged as a trophy or any other tasteful form.—1, S. J. Baldwin, 50*s.* and silver medal of the B.B.K.A.; 2, F. Cudd, 30*s.* and bronze medal of the B.B.K.A.; 3, A. D. Woodley, 20*s.*; 4, Walter Dance (gardener to Colonel Lowe), *British Bee Journal*, value 10*s.*; 5, J. D. McNally and Walter Debnam, equal, six dozen Breffit's jars, value 8*s.*

191.—Comb honey in twelve 1-lb. sections (19 entries).—1, Walter Debnam, 20*s.*; 2, J. D. McNally, 15*s.*; 3, A. D. Woodley, 2*s.* 6*d.*; 4, Henry Kerridge, 5*s.*; 5, S. J. Baldwin, 2*s.* 6*d.*; H. C., Charles Trevener.

192.—Run or extracted honey in twelve 1-lb. glass jars (23 entries).—1, Henry Kerridge, 20*s.*; 2, Walter Debnam, 15*s.*; 3, George Cole, 7*s.* 6*d.*; 4, Walter Dance, 5*s.*; 5, George Stocks, 7*s.* 6*d.*; H. C., A. D. Woodley.

193.—Comb honey in 1-lb. sections.—1, Jeanie McNally, for six 1-lb. sections, Baker's No. 105 hive, 10*s.* 6*d.*; *Modern Bee Farm*, 7*s.* 6*d.*; Howard's feeder, 2*s.*: value 20*s.* 2, Allen Potter (four 1-lb. sections), *Modern Bee Farm*, 7*s.* 6*d.*; Jenkins' crate, 4*s.* 3*d.*; Hutchings' feeder, 1*s.* 6*d.*; Meadows' section cases, 2*s.*: value 15*s.* 3*d.* 3, Richard H. Coppin (twelve 1-lb. sections), Hutchings' section rack, 4*s.* 6*d.*; Baldwin's feeder,' 2*s.*: value, 6*s.* 6*d.* 4, C. Duncan (three, 1-lb. sections), three dozen Breffit's jars: value 4*s.*

194.—Run or extracted honey in 1-lb. jars, not less than 2 lbs.—1, Jeanie McNally (six bottles), 'Gayton' hive, 12*s.* 6*d.*; *Modern Bee Farm*, 7*s.* 6*d.*: value 20*s.* 2, Allen Potter (four 1-lb. bottles), 'Little Wonder' honey extractor, 7*s.* 6*d.*; Baldwin's No. 69 Smoker, 5*s.*; Baldwin's foundation, 3*l.*: value 15*s.* 6*d.* 3, R. H. Coppin (twelve 1-lb. bottles), Hutchings' fumigator, 1*s.* 6*d.*; Baldwin's foundation, 2*s.* 2*d.*: value 6*s.* 8*d.* 4, A. J. Runciman (two 1-lb. bottles), three dozen Breffit's jars: value 4*s.* Commended, George Stocks, jun., two 1-lb. bottles.

195.—British wax from exhibitor's own hive (18 exhibits).—1, J. D. McNally, Turner's cottager's hive, 10*s.* 6*d.*; *Modern Bee Farm*, 3*s.* 6*d.*: value 14*s.* 2, R. H. Coppin, *British Bee Journal*, 10*s.* 6*d.*; B.B.S.'s section cases, 2*s.*; value 12*s.* 6*d.* 3, W. Hollands, three dozen Breffit's jars, 4*s.*; three dozen Parker's honey tins, 6*s.*: value 10*s.*

196.—Honey in applied forms (such as foods, beverages, confectionery, medicine, &c).—1, Rev. V. Moyle, Baker's No. 1a hive, 16*s.* 6*d.*; *Modern Bee Farm*, 3*s.* 6*d.*: value 20*s.* 2, George Stocks, six dozen Breffit's jars, 8*s.*; *Modern Bee Farm*, 3*s.* 6*d.*: value 11*s.* 6*d.* 3, Henry Kerridge, three dozen Breffit's jars, 1*s.*

Selected Query.

[21.] *In working for extracted honey do you prefer standard frames in the upper hive or shallow frames 5½ inches deep? Do you consider it best to use a queen-and-drone excluder between the hives?*

I have had no experience of shallow frames, but should imagine they would be less liable to break. I discarded queen-and-drone excluder long ago as useless. —E. Ball.

In working for extracted honey I should not use the 'tiering' system at all, and most certainly in any event, should not use shallow frames for the purpose. To me it is sickening to read the rotten rubbish that sometimes appears, extolling this hive or that, on the ground that the bees will store most honey in this or that form of receptacle; for it is quite certain that bees cannot anywhere store more honey than they can collect, and it is equally certain that having collected all possible, they *will* deposit it *somewhere* in the hive, and the principle I have always adhered to is that that *somewhere* should be where it is most easily comeatable by the bee-keeper. If compelled by an unwise employer to work on the tiering system, I should prefer interchangeable standard frames for both top and bottom storey, although I should detest the principle that made it necessary to pull the hive all to pieces when interchange of frames became desirable. 'I speak whereof I know.' Excluder zinc would in such case be unnecessary.—C. N. Abbott.

I have not found any advantage gained by using shallow frames 5½ inches deep, and prefer standard frames; but I would recommend that a queen and drone excluder always be used between the hives, as the quality of the honey obtained is thereby greatly improved, being much brighter in appearance than that obtained without the use of excluders.—H. Wood, *Lichfield*.

We prefer a frame 6 inches deep for extracted honey, also for many other purposes in connexion with the standard frame. In all cases, save with a swarm, we use excluder. Being an established colony's purpose to increase and multiply, super work is not safe without. A swarm purposed to store and furnish a home; with such, we have not found excluder so great a necessity.—JOHN H. HOWARD, *The Model Apiary, Holme, Peterborough.*

I like standard frames in preference to shallow, as in doubling you may remove two or three outside frames, containing most honey and little (*worker*) brood to upper storey, and insert full sheets of foundation in place of them, but always use excluder between.—TOM SELLS.

I much prefer standard frames in the upper hive, wired. I consider it best to use queen-and-drone excluder zinc between the hives.—HENRY BESWICK.

Have not used the shallow frames, so cannot say. I should consider it best to use a queen-excluder, if combs ready for filling are given in the top hive or box; those excluders that give bee-space below and also above are preferable, as causing least impediment to the bees when carrying their loads of honey to the store combs.—W. WOODLEY.

Always, till last year, I used frames the same as my hives. I then tried some shallow frames, and like them very well; but I like the larger frames better, as when the frames are full of honey one gets more honey extracted with less labour. I do not use excluder-zinc, as the bees never seem to go through freely. If we had some that would keep the queen and drones out, without being any hindrance to the bees, I should prefer it.—JOHN WALTON.

In a good honey flow I do not think there is any perceptible difference; in poor seasons bees would probably begin rather earlier in shallow frames. I should always prefer a honey-board both for production of comb and extracted honey; where standard frames are used it does not so much matter, as they can be easily utilised at end of season in bottom chamber if containing brood.—JOHN EDEY.

I much prefer the shallow frames—say, 5½ in. deep—with the use of queen and drone-excluding honey-board. Experience teaches that on this system honey is obtained more abundantly and of finer quality than by any other that I have tried.—GEORGE RAYNOR.

I prefer shallow frames 5½ inches deep in the upper hive for tiering up, with a queen excluder honey-board between it and the brood-chamber. This will be found to give the best results.—JOHN M. HOOKER.

BEE-KEEPERS' VOCABULARY;

OR, GLOSSARY OF TECHNICAL AND SCIENTIFIC WORDS USED IN WORKS UPON BEE-KEEPING.

Bacillus. plur. *bacilli*, *n.* (*late L.* a little rod; dim. of *baculus*, a rod.)—A genus of cylindrical or rod-shaped bacteria; vegetable micro-organisms multiplying by fission, and distinguished for their power of forming spores, which possess extraordinary vitality, and are capable of resisting high and low temperatures; even acids that would destroy *bacilli* have no effect on their spores.

Bacillus alvei. (*L. alveus*, hive.)—Name given to the species of micro-organisms found present in decaying larvæ in the disease known as 'foul brood.'

Bacillus alveolaris. (*L. alveolus*, a cell in a bee-hive.)—The name given in Germany to the bacillus present in foul brood.

Bacillus depilis, or **Gaytoni.** (*L. depilis*, without hair.)—Name given to micro-organism found in hairless bees.

Backward flight.—Applied to a bee on the wing, receding, head backwards, and is accomplished by changing the inclination of the plane of oscillation of the wings. This is done by moving the abdomen of the insect so as to displace its centre of gravity.

Bacteria. *n. pl.* (*mod. L.* and *Gr. bacterion*; dim. of *baktron*, a staff.)—The general name given to minute unicellular organisms not containing chlorophyl, and multiplying by fission. Hence the term 'Schizomycetes,' or 'splitting fungi,' is applied to them.

Bacterial. *a.*—Of or pertaining to bacteria.

Bactericidal. *a.* (*L. bacterium*, and *cædo*, I slay.)—Destructive of bacteria.

Bacteriology. (*Gr. bacterion*, and *logos*, discourse.)—The scientific study of bacteria.

Bacterium. *n. pl. bacteria* (*L.*)—A genus of schizomycetæ, which are slightly elongated-elliptical, fusiform, or short and cylindrical, with rounded ends, and capable of spontaneous locomotion, being possessed of a flagellum or filament at one or both ends. Various species are found in all decomposing animal and vegetable liquids. Spore formation like that of bacillus.

Balling a queen. (*Ger. ball*, a ball or globular body.) Inaccurate, there being no English verb *to ball*; *encasing* is the correct term.—Bees surrounding a queen in a small, compact ball or cluster, generally with the intention of killing her.

Barbed. *p. pl.* (*L. barba*, a beard.)—Bearded; jagged with hooks or points standing backwards.

Barbs of sting.—The hooks or points on the two darts of the sting standing backwards as in an arrow, and intended to prevent the instrument from being extracted. Each barb in the sting of a bee is provided with a small opening through which the poison is forced out.

Bar-hive. (From *Sax. beorgan*, to secure, and *hufe*, a house.)—A hive in which the combs are secured to, and suspended from bars, instead of being enclosed in frames. Used formerly, but has been almost entirely superseded by the frame-hive.

Bar-frame hive.—Applied to hives with frames the top bar of which was made to be detached from the other three. Frame-hive is the more accurate term.

Bark hive.—Hive made from the bark of cork and other trees.

Bars. *n. plur.* (*Fr. barre.*)—Strips of wood or metal from which the combs hang in bar hives and supers.

TO PREVENT STINGS.—It is a fact not generally known that if one holds his breath, wasps, bees, and hornets, can be handled with impunity. The skin becomes sting-proof, and, holding the insect by the feet, and giving her full liberty of action, you can see her drive her weapon against the impenetrable surface with a force that lifts her body with every stroke, but let the smallest quantity of air escape from the lungs, and the sting will penetrate at once. I have never seen an exception to this in twenty-five years' observation. I have taught young ladies with very delicate hands to astonish their friends by the performance of this feat; and I saw one so severely stung as to require the services of a physician through laughing at a witty remark of her sister, forgetting that laughing required breath. For a theory in explanation I am led to believe that holding the breath partially closes the pores of the skin. My experiments in that direction have not been exact enough to be of any scientific value, but I am satisfied that it very sensibly affects the amount of insensible perspiration.—Mr. WILDER in *Science* (*America*).

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to "The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements.)*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

IRISH ASSOCIATION'S STANDARD HIVE.

[1763.] With reference to your Editorial Notice on 2nd August of the Irish Association's Standard Hive, the Committee wish me to say that a full description of this hive with illustrations appeared in the *British Bee Journal* for 20th October, 1887, and they desire me, with your kind permission, to make a few observations in reply to your criticism.

There is an incorrectness in the second paragraph of the notice, where regret is expressed that we did not adopt the same size frame as the British Standard, 'the depth of which was fixed after considerable thought had been bestowed on the subject,' clearly implying that the depth of our frame is different, and that this change is due to insufficient thought on our part. Now, the dimensions of our frame were adopted after so much thought on the part of fully qualified persons, that I must say we should have been entitled to our opinion had we really altered the depth. But, as a matter of fact, the depth of our frame is the same as that of the British Standard, as is stated, though inconsistently, in the first paragraph of your notice. The dimensions, indeed, of the Irish are in every respect the same as those of the British, except as regards the length of the top bar, which is 16 inches in the Irish as against 17 in the British.

You say, in reference, I presume, to our recommending hives to be made 9¼ inches in depth, that 'the chief reason for finally settling the depth of the (British) Standard frame at 8½ inches was to admit of the hive being made 9 inches deep, this being the depth of the deals (9 inches by 3) imported into this country, so that they could be made with as little waste of material and as cheap as possible.' But we do not admit that the sides of a hive to take an 8½-inch frame can safely be made from boards cut from a 9-inch deal. Several boards, originally 9 inches wide, were measured to-day. These, without planing or dressing of any sort, or being subjected to artificial heat, had shrunk to 8¾ inches, which, if you allow ¼ inch for planing, would only give a space of ⅜ inch between the bottom of the frame and the floor-board. Even if you only allow ¼ inch for shrinking and another ⅛ inch for planing, not more than a bare ¼ inch will be left between the bottom of the frame and the floor-board, which many qualified bee-keepers think insufficient when manipulating strong stocks. Moreover, in hives in which the side rests on the floor-board, a plinth will be required to keep out wet, and the 1¾-inch piece which you call waste can very well be used for making this plinth. If you will refer to the illustration of our hive you will see that the back end of the Irish Standard hive is 10¼ inches deep, while the sides are 9½ inches deep, both sides and back end having a rabbet 1 inch deep by ½ inch wide taken out of their lower edges for the floor-board, which is 15 inches wide, so that the sides and end overhang the floor-board, thus saving the material for plinths and also the cost of making and fixing them, besides having the hive completely waterproof so far as the joint between the hive and floor-board is concerned.

A point in favour of the Irish Standard Hive, which you seem to have overlooked, is, that the 16-inch top bar admits of its being made with single sides where a hive at the lowest possible cost is desired, and this, we think, is not possible with the 17-inch top bar.—Henry Chenevix, *Hon. Sec. Irish Bee-keepers' Association, 10th August*, 1888.

[The paragraph to which you refer should read thus:—'It is much to be regretted that the Irish Association did not adopt the same size as the British Standard.' The addition of the word *frame* was a mistake of the printer. It will be seen by the previous paragraph that we are not referring to the frame, but the hive, as we there say, the frame is *the same as the English standard*. We do not wish to enter into the question of shrinkage, &c. Our hive-manufacturers have found no difficulty when using *good materials* in making the standard frames fit a hive made with 9-inch boards. It is quite true that the piece ripped off a 11-inch board would make the greater portion of the plinth, but wide stuff costs more than 9-inch. The part of the Irish hive we take exception to most is the fixed floor-board, which cannot be changed or cleaned in the spring without taking out the frames and disturbing the bees. This we consider a mistake.—Ed.]

THE IMPORTANCE OF FORMIC ACID IN HONEY.

[1764.] In No. 6 of the *Eichstadt Bienenzeitung* for the current year, Dr. Mullenhoff says, on page 61, 'When the cell is nearly filled and the honey is not intended for immediate consumption the bees add *a drop of the secretion of their poison gland*. After the addition of some more wax on the prism side, followed by the bending together of the rims of the cells the latter become half closed; the cell is then filled up and finally closed by completing the cell cover all round. Thus hermetically sealed the honey is protected from evaporation.'

This most interesting observation in the bee-hive attracted my attention; the more so, since from a practical point of view it confirmed the finding in the honey of formic acid—bee-poison, it is well known, is formic acid—by Professor Erlenmeyer and myself in 1878, when I reported at the meeting of Swiss naturalists in Bern, as follows (*see Swiss Bienenzeitung*, 1879, No. 2):—'There, in the honey stomach, is the real concentrating apparatus of this very dilute solution of sugar (nectar) in the course of diffusion of the water through the membranes of the ante-stomach and removal through the many termini of the urinary organs. By the addition of formic acid the preparation is completed and finds its way through the alimentary tube into the honey-cells. Nectar contains no coagulable albumen, while honey does. In the nectar from *Fritillaria imperialis** we found no volatile acid; but I discovered formic acid in the nectar from *Protea mellifera* from the Cape of Good Hope, with the examination of which I am at present occupied at the Agricultural Chemical Laboratory here. It is interesting to find that Nature in that hot climate has provided for the preservation of the nectar, which is so liable to decomposition, before it is collected and further concentrated by bees and human beings. All honey, however, contains volatile formic acid, which plays a very important part in the economy of bees, not only as a poison, but undoubtedly also in many other respects.'

On the antiseptic properties of formic acid, Professor Erlenmeyer expressed himself as follows at the sitting of the Academy of Science at Munich, on the 6th February, 1875:—

'In conclusion I must not omit to mention that the

*The nectar from this flower is said to possess emetic properties.

results of my experiments with dilute formic acid (one part acid of the specific gravity of 1·205 and 1000 parts of water) were quite similar to those obtained with salicylic acid. On the whole it seems that the property of arresting fermentation and putrefaction is possessed by many other substances, which produce a dark colour in solutions of salts of iron. If formic acid, meconic acid, or rhodan-hydrogen be added to a fermenting liquid in the proportion of 1 : 1000, fermentation ceases. I am engaged at present in comparing the antiseptic action of these substances with one another and may remark now that a mixture which in 1000 parts contains 1 part of boracic acid, ferments very briskly.

I was induced to experiment with formic acid, in the first place, because it is closely allied to prussic acid; and secondly, because, as I have shown before, it behaves in many respects similarly to sulphurous acid. But prussic acid and sulphurous acid are well known to be most powerful antiseptics.

I have indeed had frequent opportunities in the laboratory of observing the energetic anti-fermentative property of formic acid in a very striking manner—it not only prevents fermentation, but arrests it immediately when fully established.

From what I have said above it will be seen what an interesting physiological fact in the economy of bees we are discussing here. The bees indeed require but a minute drop of poison for each cell, as formic acid could only be detected in the samples of honey in very small quantity. But as it acts so powerfully an infinitely small quantity is all that is required for each cell, the more so as this acid doubtless exists in a very concentrated state in bee-poison.—Dr. A. von Planta, *Zurich*.

FEEDING BACK.

[1765.] The objections to this practice, briefly told, are,—that the work must be performed at a time when robber bees are troublesome; there is a liability to creating suspicion in the minds of the public as regards the purity of the honey; the honey loses its freshness, so to speak, by being extracted, stored in vessels, heated, run through feeders, and re-handled by the bees; when honey is fed to secure the completion of unfinished sections, the combs have a botched, patched, bulged appearance, unless they are arranged with great care, and the whole operation managed with skill; the combs are also likely to become travel-stained unless care is exercised to have new combs in the brood-nest, or the sections are removed very promptly upon their completion; if there should be an unknown case or two of foul brood in the apiary, nothing would spread it more effectually; but the most serious objection is the increased tendency of the honey to candy.

The advantages are few, but weighty. Comb honey is more saleable, at a higher price, than extracted honey, and, if the latter can be changed into the former at no great expense, there are quicker sales and greater profits: but the greater advantage is in securing the completion of nearly finished sections.

We will now show how most of the objections may be removed or greatly overcome. With a feeder like Mr. Heddon's, there need be no trouble whatever from robbers. The reservoir is in the centre, and just over it a part of the cover slides back in grooves. There is no contact with the bees, no smoke is needed, no propolis disturbed, and the cover fits so snugly that no odour of honey escapes to attract robbers. The first feeding should be done at dusk, as it puts the bees in an excited state, and this is the time when robbers would make trouble. After the bees have become accustomed to finding honey in the feeder, feeding produces but little, if any, excitement; still at dusk is the best time to feed, as we thus avoid the annoyance of having robber bees follow us from hive to hive and dive into the feeder reservoir whenever it is opened. Mr. Unterkircher speaks of the bees rushing out and stinging whenever the cover of a hive is raised. We have noticed this same feature. When the cover is taken entirely off the feeder, we disturb the bees at their feast, and it seems to anger them. But there is no necessity of removing the covers. When we wish to take off the cases, we insert the blade of a pocket-knife between the feeder and the upper case, take hold of the handle of the feeder upon that side and lift up, and give the knife a twist at the same time, which loosens the feeder. We then puff some smoke in the opening between the feeder and the upper case, set down the smoker and lift off the feeder, placing it corner-wise upon the cover of a neighbouring hive. The diagonally opposite corners of the feeder then rest upon the wide projecting cleats nailed to the ends of the cover, and raise the bottom of the feeder from the cover so that no bees are crushed. The man who attempts to feed in a haphazard way, using anything he can pick up for a feeder, spilling honey about, &c., will certainly have trouble with robbers; but the one who goes at it systematically, with the right kind of hives, feeders, and utensils, can snap his fingers at the robber bees. In regard to any suspicion that might be created in the minds of consumers by the feeding of honey to have it stored in combs, we would say that the public need know nothing of it. Keep still about it. Don't blab. Producers, manufacturers, and dealers in other lines, do not herald their methods to the world, why should bee-keepers? In other professions there are 'trade secrets,' why should bee-keeping be an exception? We have fed back honey for years, feeding thousands of pounds, and yet not a neighbour ever knew of it. We have even had bee-keepers visit us, and go away with no suspicions that we were feeding back. We do think that 'fed honey' has a slightly different taste from honey stored directly in the combs by the bees, but it is very slight indeed where all the utensils are kept 'as neat as wax,' and would be noticed only by an expert. We would not advise the heating of the honey. If the water that is used to thin it be heated it is sufficient. This warming and thinning of the honey enables the bees to handle it much more rapidly.

The lengthening of cells, bulging and patching up of combs, have been most graphically described by Dr. Miller, and but little can be added to his directions how to overcome the difficulty. Bees usually have about a $\frac{3}{8}$ space between the combs, and in putting back the unfinished sections we must try and preserve this space. When the space is less than this, no harm is done unless it become so small that a bee cannot pass through, when the bees will connect the two surfaces at some points by little bridges of wax, and when the sections are taken apart these little bridges will pull pieces out from one comb or the other. When the space is much greater than $\frac{3}{8}$, and the comb upon each side is sealed, the bees, especially if crowded, will construct comb upon the sealed surface of the other comb, which gives it a very botched appearance. If the comb at one side of the space be sealed, and the other not, the sealed comb will be left undisturbed, and the unsealed cells on the opposite side lengthened out until the space between the two combs is reduced to about $\frac{3}{8}$. If, in this instance, the sealed comb should be smooth and even, and in the right place as regards the section as a whole, all will be well; but if it be concave or convex, the unfinished comb facing it will be drawn out in conformity with the surface of the finished comb. If two unfinished surfaces, in the same stage of completion, are brought facing each other near the centre of the super, they will be drawn out and sealed straight and true and alike; if they are near the outside, the chances are that the comb nearest the centre of the super will grow faster than the one farther out, and a bulge will be the result. Combs near the centre of the super are drawn out quicker and

finished sooner than those at the outside and corners, hence we place at the outside those sections that are the nearest completion. Especially do we take pains to have sealed surfaces come next to the sides of the super, while combs the furthest from completion are placed in the centre. By this arrangement of all the sections in a super are finished at about the same time. Unless some of the combs are beginning to show signs of travel-stains, it is better to leave on the super until all, or at least nearly all, of the combs are completed, for, as the combs near completion, this matter of adjustment becomes more difficult. Where foundation is used, and comb honey produced, 'right from the stump,' by feeding extracted honey, we have none of this bulging, patching difficulty to contend with, as the combs all grow alike, and some of the finest, straightest, plumpest, whitest, and most handsome comb honey can be produced that the eye ever beheld; but we have never found it profitable, except by placing a few cases on top, near the close of finishing up a lot of unfinished sections, to give the bees room, and thus prevent the bulging of combs, as explained in the June *Review*. In regard to spreading foul brood by feeding back, we do not know that it is practical to overcome this objection. Of course it would be possible to add something to the honey to destroy the germs, if any should be present. Whether this addition would be objectionable we do not know, but we feel quite certain that most bee-keepers would take the risk rather than go to this trouble. The most that can be done is to be ever on the alert for foul brood. And we may remark, parenthetically, that, considering the prevalence of foul brood, it would be well if every bee-keeper could see a genuine case of it, and for this reason: In its early stages it is very difficult to detect. Or perhaps we should say, scarcely noticeable, and there is a something about its appearance that is very difficult to describe; it must be seen to be comprehended. When over at Mr. Taylor's a short time ago, we were shown colonies that required a very critical examination indeed to discover any cells containing foul brood. But the tendency of the honey to candy is, in our opinion, the most insurmountable objection to feeding back, especially so if the bees are given only foundation, and all of the honey stored is 'fed' honey. When the sections are nearly completed, and the feeding is done simply to have them completed and sealed over, the proportion of 'fed' honey is so slight that the candying would not be so serious an objection were it not for the fact that the presence of a little candied honey hastens the candying of the whole mass. There is a great difference in honey as regards its candying, and one of our correspondents says that thinning the honey increases its candying propensities. We have fed but very little thick honey. The bees worked it so slowly that we became discouraged, and went back to thinning it. We know that they seal it over quicker when it is fed full thickness, and it is possible that this is the better way of feeding it. We must admit that this is a point upon which our experience is limited. We believe that the best advice that we can give upon this candying point is to sell the honey early, and in a market where it will surely reach the consumer before it candies. Of course we cannot always follow this advice, hence we consider the increased tendency of the honey to candy as the greatest objection to feeding back.

Taking one year with another, we have secured about two pounds of comb honey from the feeding of three pounds of extracted. With the right kind of weather and colonies, we have done much better—secured four pounds for five, and we shall continue to feed back to secure the completion of unfinished sections; and if others desire to do so, we feel that we have placed before about them all the information obtainable upon the subject.—W. Z. Hutchinson (*The Bee-keepers' Review.*)

[We have given above, and also at page 371, the experience of Mr. W. Z. Hutchinson on feeding back, but we must caution our readers not to expect such good results in this country. Ten or twelve years ago we ourselves experimented on feeding extracted honey to complete sections, but we soon found out that such a practice would not pay at all, and that it could only be done by an enormous waste of honey. Mr. Hutchinson says that, taking one year with another, he has secured two pounds of comb honey from feeding back three pounds; but our own experience is very different from this, and we proved to our satisfaction that it took at the least from two to three pounds of extracted honey to produce one pound of comb honey. We have, therefore, not continued to practise it, and prefer extracting the honey from unfinished sections, as the combs, after they have been cleaned by the bees, can be kept very well until until the next season. Later we shall have occasion to speak more fully upon this subject, for there are other objections to feeding back besides its unprofitableness. —Ed.]

AN EXPLANATION WANTED.—A REPLY TO 'SHERBORNE.'

[1766.] I think Mr. Sims owes the readers of the *Journal*, and especially those of them who live in his neighbourhood, an explanation. In his 'Echo,' dated the 13th inst., he reports having on that date examined one of his hives and found a rack of twenty-eight sections full of honey and the middle ones sealed. The frames also contained from two to four pounds each, mostly sealed. Taking the number of frames under the rack as ten, and giving them an average of three pounds each, we have in the body of the hive thirty pounds of honey, which, added to that in the rack, brings the total to fifty-eight pounds. Is it possible? I know that we have had a few fine days from the 7th to the 12th inst., and I know that the bees can do wonders when they have an opportunity, but those fine days surely cannot account for the presence of the fifty-eight pounds *mostly sealed*. I can only account for it in one of three ways: that the atmospheric conditions were of late more favourable at Navigation than they were a few miles away (which is not likely); that this hive managed to store a considerable quantity of honey from the fruit-blossoms (which, from what I know of Navigation, is just as unlikely), or that the bees have been fed too liberally. Is it not possible, Mr. Sims, that you have made a mistake, or mistakes? Are you sure that what you thought was sealed honey was not sealed brood? (Pray, don't be angry. I remember one such mistake recorded in this *Journal*.) Then perhaps you have estimated the weight in the frames too highly. A full frame at the ordinary distance will scarcely hold more than four pounds. Whether you have made a mistake or not, allow me to wish you as much success—or more—with the denizens of the hive as you have attained with those of the coop.

'Sherborne' (1758) tells us how he managed last winter, and wishes me to inform him wherein he mismanaged. He could scarcely ask a more incompetent person. However, I will endeavour to comply with his request, to suffer presently, perhaps, for my temerity. Giving twenty-five to thirty pounds of honey was a good commencement. The packing was unnecessarily elaborate. I find strong stocks winter well under a single sheet of enamel cloth and with the full complement of frames. Weaker stocks do better confined to as many frames as they cover, and under a porous quilt of, say, four thicknesses of calico weighted down. Draughts must be particularly avoided against both at the top and sides. If long hives are used see that the division-boards are close fitting. In these I prefer that even a weak stock should have a couple of frames more than they can cover, as I find that the bees choose to cluster close to the division-board away from the direct draught which

strikes at the entrance. No, I would not recommend overhauling your stocks during winter. On the contrary, I would recommend absolute non-interference until some very fine day in April—that is, if you are confident of the presence of sufficient stores. You say you began feeding with syrup at Easter. Hardly advisable, I should say, where stocks went into winter quarters with twenty-five to thirty pounds of honey. Don't feed until the stores already in the hive are nearly exhausted. Don't bother with pea-flour if you have a middling quantity of hazel and willow in your vicinity. Take special care that the bees are well covered in spring. Be very slow in spreading brood; leave that operation until the middle of May.—East Glamorgan.

EXPERIENCES.

[1767.] Major Fair, the secretary of the Middlesex Bee-keepers' Association for this district, gave me about the end of March your first number of the *British Bee-keepers' Adviser*, and I was so pleased with it that I at once ordered it at the bookseller's to come in regularly. I have been very much amused with the experiences of some of your correspondents, and many lessons I have learned through the publishing of their failures. I do not know if my experience would be of any benefit to any one; if you think so, please make it public.

In July, 1885, a swarm of bees came and settled on the stump of a branch standing out from the tree where a branch had been broken off about twelve inches. The said stump was about six inches thick, about twenty feet, or a little more, from the ground. I had never had any experience with bee-keeping, but at the time I had a young man working under me whose father had kept bees for some years down the other side of Lymington; and he persuaded me to capture the bees. After trying to excuse myself, as I had no skep or anything else fit to put them in, he persisting they would do in anything, I got a box about 11 by 11 ins. each way; and after a deal of persuasion from him, I got a ladder and put it up the tree near the bees, and then very cautiously carried the box up and fixed it over them, expecting the bees to go in, for I could not shake them in, and I dare not attempt to try any other way. In about half an hour about half of them were working their way up into the box. Then a man came along that I knew, and he offered to hive them for me, saying the bees would never go up altogether. You may guess I gave permission, and he was soon on the ladder, and when little more than half way up, going up roughly, he shook the lot down, and it fell on the ladder just above his head, and then to the ground, and the whole lot of bees were swarming round his head; it made the bees vicious, he got five stings, and I got two. After that they settled again in the same place, and he soon put them in the box. I watched them all go into the box, then went to make a stand and fix it afterwards. When I went to fetch them in I was vexed to find that a boy had kicked the box over, and the bees outside the box, and I felt like giving it up, but I got a branch and wiped the bees down after turning the box up right again, and soon had the pleasure of seeing all go inside. Then I carried them in and put them on the stand, and felt a little proud that I had accomplished such a feat. The bees took kindly to their new home, and went to work finely. I soon became interested in my bees, was never tired of listening to people that could tell me anything about bees, and, like others' experiences, had to hear much rubbish; nevertheless, out of all the ridiculous I got occasionally some little idea, if not actual knowledge. Then I had *Modern Bee-keeping* given to me, and Pagden's little book on Bee-keeping. Then I went in for making a hive and frames according to *Modern Bee-keeping* instructions, and was very pleased when I finished the first hive, which was in time for first swarm that came off on June 11th, 1886; and I got so excited with talking and studying about bees and making bee-hives, that when I shut my eyes to sleep I seemed to have numbers of bees moving about in my vision. My second hive was soon finished after swarm came off, then I placed the new hive, number two, where the stock stood, placed stock on top of frames to get the bees to take to it and build in it; but although the bees passed through the hive they would not build comb in new hive. Then I drove the bees out of stock, took comb from stock, and tied it into frames, and put into new hive and bees with it. Three days after I went to take the tapes off, got into middle of hive, and down dropped the comb, brood, and all out of frame. I managed to get it out and tie it in afresh, left it a week, and it was fixed all right, and all went on well. The next trouble was the swarm built their comb all across the frames, so in autumn 1887 I had to drive bees, and cut out all combs and tie in frames; they fixed them all right. In 1887 old stock gave me two swarms, one June 9th, next June 19th; sold second swarm for 15s., so with swarm and honey that I sold I had a little surplus left after paying for tools, wood, &c., for hives, and in the spring of 1888 I made hives to hold seventeen frames, and division-board, to try and prevent swarming. I changed my bees every spring into clean hives for summer. May 7th, 1888, I put crate sections on one hive, on May 14th changed into large hive, putting a frame of sections front of hive, and ten frames, standard, behind the sections, then division-board with passage under, and on top a crate with eighteen sections, and then on May 25th a swarm came off weighing five pounds. I cut out queen-cells. Four days after I had another swarm come off from another hive, on June 4th, that I had treated in the same way by giving plenty of room in advance, but they would swarm even after they had begun to draw out comb and stored honey behind the division-board. So you see there is no rule without an exception. I have made seven hives since beginning of 1886, and I do not know how many frames, and two smokers, six section crates, a case for showing one frame of comb-honey, three cork-dust crates, and all done in my odd time after and before going to work. The station-master in our village kept bees, and I got great help from him—help that I shall never forget, for I never went to him to ask a question but he was ever ready to answer and help me as far as he knew, and also to encourage me to push on. Last month I passed my examination and got my certificate for third-class expert, and I may say that I have five hives of bees second to none in the neighbourhood; clean, healthy, strong. I feed well every autumn and spring. In my first box I was a bit puzzled to know how to feed, after a bit of thought I hit upon a plan, took my pocket-knife and cut a hole in top, took out piece of wood, put piece of perforated zinc over hole, tied muslin over top of jam-bottle, and put large flower-pot over bottle, then covered over with sacks. I fed with syrup according to *Modern Bee-keeping*, and when I pack them up for winter I place three or four flour-cakes over the frames, and the bees come out well in spring.

I am forwarding you a piece of comb from which the wax has been melted. I thought the comb was all wax, but it appears not to be so. Would you be kind enough to tell me, through the next number, what it is made of? I wish you every success with the new *Journal*, and I hope it may be a means whereby we may tell each other of our successes and our failures, and so help on the class to which I belong, and I believe those for which the *Journal* was started, namely the cottager. My motto now is 'Persevereance overcomes great difficulties.'—W. D. Marlow, *Teddington, Middlesex.*

[That which you observed are the cocoons of each successive bee left as it emerges from its birth-place; these indicate the number of generations which have taken place in the cell. These silken pellicles, ever accumulating, gradually reduce the size of the cell, render

it unfit for use, and affect the size and productiveness of the worker bee. Dr. Hunter counted upwards of twenty of these pellicles in the cells of an old comb. It follows that after a series of generations old comb should be discarded, and new comb take its place.—Ed.]

WILL REMOVING THE QUEEN INCREASE THE HONEY YIELD?

[1768.] Quite a number of bee-keepers assert that more honey can be secured by removing the queen about three weeks previous to the close of the honey harvest.

The theory is, that stopping the production of brood turns the energies of the bees entirely into honey gathering; besides this, no honey is used in feeding the brood. Mr. F. Cheshire says that the rearing of a bee, from the egg to maturity, costs a colony the equivalent of four cells of honey, and it is only because a bee, in a fair yield, is able to requite the colony with many times its cost, that a large population means surplus; but if this large population is brought upon the stage after the harvest is over, it becomes a consuming instead of a producing population.

Removal of the queen also prevents increase, which, in out apiaries, is especially desirable. When the bee-keeper has a large number of colonies and prefers honey to increase, the prevention of swarming is quite desirable. In some localities and seasons, the honey flow is early and of short duration, and if the bees turn their energies in the direction of swarming, but little surplus is secured.

When a queen is removed a frame of brood covered with bees is usually taken with her, and they are put in a small hive where they are kept until the time arrives for their return. After her removal if preparations for swarming have not already been commenced in the old hive, queen-cells will at once be started, and the bees thus endeavour to retrieve their loss. At the end of eight or nine days the queen-cells must be cut out, and the bees given a frame of eggs or unsealed brood, from which they can start another batch of cells. Just before this lot of cells hatch (in eight or nine days), they must be cut out and another comb of brood given. This method of management must be continued as long as the colony is left queenless, because, if hopelessly queenless, the bees seem to lose courage; they must have a queen or the hope of one.

The small hive containing the removed bees and queen is sometimes placed upon top of the old hive, and when they are returned, the bees that have learned to recognise the upper hive as their home, will, upon finding it gone, gather in a cluster upon the top of the hive, where they will remain a short time, and then take up a line of march down over the front of the hive to the entrance, and join the parent colony again.

It will be seen that this method of removing the queen entails considerable labour, and is, we think, not advisable unless to prevent swarming, as the production of brood can be greatly curtailed by contracting the brood-nest, which is a short and simple operation requiring very little work.

The method of removing the queen that strikes us the most favourably, is that of allowing the bees to swarm, then removing and destroying the old queen allowing the bees to return, and then, at the sixth or seventh day, cutting out all the queen-cells except one. This prevents increase, deprives the colony of a laying queen for about eighteen days, besides furnishing it with a young queen. —W. Z. Hutchinson (*Country Gentleman*).

TEMPER AND CHARACTERISTICS OF THE EASTERN RACES.

[1769.] As to your questions: 1. 'Do you not have in Carniola, and in your apiary, queens which produce some workers with yellow bands?' Yes, yes; and I have yet to see an apiary in Carniola where such do not exist, although I have visited all the most important apiaries existing here, and have seen hundreds of colonies. There is in the race a tinge of yellow blood that crops out every now and then, do the best one may. I breed only from such queens as produce *grey workers*—such as show no yellow or orange bands—not even a *tinge* of of orange, and I permit no drones to be reared in my apiary except those from Carniolan queens, whose workers and drones are quite grey; but there are several native apiaries (box hives) near me over which I have no control, and whose owners care nothing for yellow bands if they exist.

There were at my residence to-day two intelligent bee-keepers from the northern parts of Carniola, and I questioned them on this point, and they replied that an occasional tendency towards orange or rusty-red bands was always the case with all Carniolans, but that it was no mark of impurity in the race, since it exists so all over Carniola. This agrees with my own observations made here in 1880, 1883, 1886, 1887, and 1888. Please refer to the article on Carniolans which I published in the leaflet *Bees* for January 20th, 1886, and you will see that I mentioned this in the second paragraph.

2. 'Are all Carniolans the gentlest bees known?' Like all races, individual colonies differ in temper. The crossest Carniolans are likely crosser—less gentle—than the gentlest Italians. But for all this it is none the less true that the race—Carniolans—are far gentler than Italians, and the crossest Carniolans by no means equal in crossness the crossest Italians. And though I kept Italians in Michigan for many years, and also several years in Tennessee, and have handled them in many different apiaries in the north and south, it has never been my lot to meet with any (in America nor in any part of Italy, which I have visited some six or eight times, and the length and breadth of which I have travelled several times), that were as gentle as the gentle Carniolans. When now we take into account the fact that Carniolans are much hardier and more prolific than Italians, we have abundant reason to place them as superior to Italians. Yellow bands or no yellow bands, they are better, and the best we can do is to try to avoid the bands in breeding. Hybrid bees are common in Italy, except in a few districts. Moreover, several prominent Italian breeders have imported Cyprian and Syrian bees from which to breed, in order to have *yellow* stock! Perhaps also to give *energy* to their lazy, sluggish, drone-like workers!

I suppose when you advertise Carniolans as just 'as *prolific as the wicked races*,' you mean by this last Egyptians, Palestines and Syrians. Surely, you would not commit the blunder of including under this expression also the *Cyprians!* Well, at any rate, you have made a decided mistake in saying that Carniolans are so prolific as any other race, except other European races, which they excel in prolificness. But Syrians exceed all other races. Cyprians are little behind them, and, indeed, individual Cyprians nearly or quite equal the best Syrians, Palestines, Egyptians, and Tunisians are close on the tails of all these others; and then come Hymettus (Greek) and Dalmatian bees standing about the same as Carniolans.

Strange to say, if I were to send you a Hymettus queen, you would not know her, nor her bees, from Carniolans, except in their *temper*. The Hymettus bees, or bees of Attica, will fly at one when he approaches their hives, with much more vigour than even blacks, and also in greater numbers. Disturb them without smoke, and you will want a brook near at hand to jump into. The same rusty-red bands, only occasionally slightly lighter—almost a dirty white, appear with them as with Carniolans.

Dalmatians are curious, shining blue-black bees that

play and chase each other like flies at the hive-entrances. They are not difficult to manage, and are splendid comb-honey bees.—Frank Benton, *Carniola, Austria, July 4th*, 1888 (*American Bee Journal.*)

THE VALUE OF EXPERIENCE.

[1770.] It is very pleasant for any one who is a real lover of the ways and means of bee-culture just for its own sake, leaving out of count the profitable keep of the same, to see from month to month so many valuable hints on the successful treatment of these busy little insects. I believe this is a subject in which we gain more real knowledge by experience or by reading the experiences of others than by perusing the theories, unsupported by practical tests, of the most capable of writers. One fact among bees is worth a hundred fancies; therefore it is that the portion of your excellent *Journal* that is more distinctly given to this department is in reality the best for amateurs and cottage bee-keepers; and to make it answer the purpose for which it is intended every available help possible to the practical working in all the departments is the very best and foremost design to be kept in view.

Now, Sir, I speak from a part of the country from which I believe you have no correspondence, and with your permission I shall occasionally give you some experiences here if it should in any way prove useful and to the benefit of your numerous readers. The weather has turned out almost completely against us here. In the early days of the summer everything went on splendidly, and we were promising ourselves a large harvest; but the wet weather came, and has so continued almost constantly. So that I am afraid the sections now half filled will scarcely be finished before the season is out, still we may expect some good work yet if the weather would improve.

I cannot trouble you any further, but hope to return to something more practical next time.—T. H., *Ireland.*

SPARROWS.

[1771.] Those sparrows! 'They are insectivorous, my friend,' says Mr. Sparrow-defender to the farmer who is deploring the ravages made in his corn-fields. Insectivorous! Aye, I believe you, my lad. Come, stand with me near my amateur apiary, and you'll have ocular evidence of the fact. For some time I have been watching my hives for the purpose of detecting such of the bee-destroyers as 'go about here seeking whom they can devour.' I have heard the snap of the swallow as he caught in mid-air the unsuspecting toiler, either on its outward journey, or on its return laden with provender; I had seen the wily blue-tit peeping into the bee entrance, and ever and anon hastily seizing a strayed denizen of the hive; and my suspicions have been excited by the artful movements of an old cock sparrow who, after suddenly darting at an object, gave

'A chirp, chirp, chirp, and ally away.'

I also saw his help-meet, Mrs. Cock Sparrow, similarly employed, and the object visible in their bills was none other than a 'little busy bee.' I vowed to exterminate the thieves if possible, and took measures for the accomplishing of my vow; when lo! to my surprise and sorrow, the pair recently mustered their progeny, and commenced to 'train them up in the way they should go,' by audaciously arresting a bee, giving it a fatal pinch, and then parentally placed it in the mouth of the wing-shaking young one. Wasn't that a sight too harrowing to the feeling of any bee-loving Briton? Yet that was not all it was my lot to endure. One dare-demon actually came within three feet from me, perched himself on an alighting-board, snatched up a bee, and mounted an apple-tree in a jiffy with its prey. Haven't I vowed vengeance against the brown-coated tribe? So soon as I can procure some acidulated drops in the shape of life-curtailing corn, most assuredly I shall commit sparrow-cide exultingly.—Aged Amateur, *Cheriton, Hants.*

FEEDING BEES WITH LAST YEAR'S HONEY.

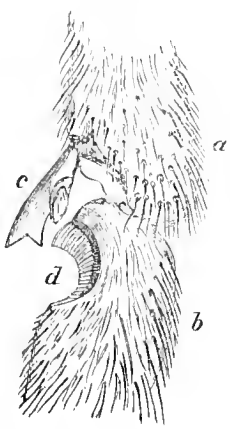
[1772.] In your issue of August 9th, under the heading 'Notice to Correspondents and Inquirers,' your correspondent 'C.' asks if it is allowed for exhibits to feed the bees with last year's honey to produce sections for competition for the silver medal of the B. B. K. A. I should have thought no one would have been so dishonourable as to resort to such means. Feeding in any form ought to be discountenanced. But as it is answered in the *Journal* of August 16th by 'C. Cox,' I suppose it is done; and to show the difficulty under the present Rules of the B. B. K. A., I will state a case I have heard of.

The judges go round; there are put before them (a year like this) two or three exhibits of 1-lb. sections of inferior quality, perhaps unsealed; they are instructed to award the silver medal to one of them by the Hon. Sec., with the words, 'We have paid our *H. Is.*, and if we do not award it we lose it altogether, and we have as much right to it as if the exhibits were good; as if we do not award it this year we cannot get it, nor will they allow us two next year instead.' They (the judges) find one exhibit well sealed and filled (for the year) by honey of inferior colour and brightness. Although they may suspect it is not altogether right, they have no complaint before them, nor any means of ascertaining; they must give it the prize, as there is no other honeycomb equal to it. If any one knows that it is not what it professes to be, they ought to give information to the Sec., or they are as bad as the other.—Alpha.

THE ANTENNÆ CLEANER OF HYMENOPTERA.

Prof. Cook, in an interesting communication in *The American Naturalist* on morphology of the legs of hymenopterous insects, thus describes the peculiar arrangement by means of which the busy bee and others of its kind are enabled to keep the antennæ free from soil and dust:

In the anterior or prothoracic legs of the honey-bee, he writes, we first notice at the base of the first tarsal joint and in the angle between it and the tibia a short, hollow semi-cylinder.



The concave surface of this cavity is smooth except at the outside margin, where there are from seventy-eight to ninety projecting hairs, which under the microscope remind one of the villi of the small intestines of mammals. These teeth, like hairs, projecting as a fringe, form a most delicate brush. The tibial spur is so modified as to resemble a very short-handled razor, the blade of which is for a wide space facing the tarsus, a most delicate membrane, and this blade forms a sort of lid to the cavity just described. When the leg is straightened this lid rarely reaches the cavity; but when the first tarsus is flexed upon the tibia it serves as a cover to the cavity and really closes it. As the antennæ are not only the sensile tactile organs but also the organs of smell, it is of the highest importance that they be kept from the dust. But the very habits of most hymenopterous insects, visiting as they do, flowers laden with

pollen, or digging in the mud and dust, tend to soil the antennæ. If a captive bee or wasp on the window pane of our room have its antennæ quietly dusted with lime or flour, we will see it pass an anterior leg forward, draw an antenna through the cleaner, and then pass the fore-legs, now foul with dust, between the brushes formed by the soft hairy inner faces of the basal tarsi of the inner legs. This will be repeated several times, when upon examination the antennæ will be found entirely freed from the troublesome dust.

Echoes from the Hives.

World's End, Newbury, Aug. 17th.—Wails from the Hives forming the Royal Berks Apiary.—We've had no summer, no chance to gather honey; we're on the verge of starvation in the middle of August; our numbers are Legion, every hive teems with a multitude of hungry bees glad to sip even the juice of the raspberries when the weather is warm enough for us to venture forth; but to-day we are prisoners; the thermometer stands only a few degrees above zero. Our outlook is gloomy as far as our own labour is concerned, but we trust the 'Boss' will not let us starve, as some 'Bosses' do their bees. We heard of even old-established hives of the whole colony dying of sheer starvation last week, and swarms of this year have died wholesale all round the district during the past week or two.—APIS MELLIFICA.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

ROBERT DE B. S.—1. *Condemned Bees.*—Condemned bees will rarely do any good if placed in empty skeps. We should not think of so wintering them. They ought to be put on frames of comb or, at least, on alternate fully-built combs and foundation. 2. *Illegal interfering with Bees.*—Place them under lock and key in the loft, moving them during the winter after they have been confined to their hives for four or five weeks by bad weather. They must be allowed an entrance and exit through wall of loft. 3. *Feeding Condemned Bees.*—Feed on autumn syrup. It is worth the expense and trouble if you give them combs; the cost will be about 4*s*.

NOVICE, SUSSEX.—1. *Wintering Bees.*—Remove supers after honey harvest and examine frames; if well filled they will winter, if not, feed quickly with autumn syrup. Do not enlarge the hive. 2. *Transferring.*—It can be done now, but we should advise their being fed up and transferred about April. If you transfer them now do not destroy the combs, there will be brood in them (see answer to R. de B. S.), as your bees will be but condemned if you remove the combs. 3. *Dividing Colony.*—It is too late in the season for dividing your colony. Remove supers and feed up for winter.

L. W. R.—1. *Super.*—This should be removed now. 2. *Feeding.*—Feed now with twenty-five to thirty pounds of syrup, as per Cowan's *Guide*, for autumn feeding, otherwise it may be too cold for the bees to get it properly ripened and capped. 3. *Condemned Bees.*—Now. 4. *Driving two Skeps.*—Drive into separate skeps. 5. *Securing Queens.*—Surplus queen of no use except to introduce to a queenless hive at once. 6. *Hiving Driven Bees.*—Join the two lots together by shaking them on a sheet in front of the frame-hive so that they run in together. One queen *must* be removed first. 7. *Bees Travelling.*—They will be all right for twenty-four hours in the skeps or swarm-boxes. 8.—*Comb-building.*—They would still build out the foundation.

G. M. THOMPSON.—A reply to your questions will appear in our next week's issue. In the meantime, if you would take the trouble to refer to our article on 'Sugar for Bee-feeding,' which appeared in No. 162, Vol. XIII., you will find the subjects you have written on fully treated, and your questions, we trust satisfactorily, answered.

WEST KENT.—1. *Hive with Foul Brood.*—We have had exactly the same experience with several stocks. 2. *Enamel Cloth.*—Yes.

E.—*Eucalyptus Honey.*—This kind of honey was kept last season by the British Bee-keepers' Stores, 6 George Yard, Fenchurch Street. We do not know whether their stock is exhausted. We should be obliged by any bee-keeper informing us where it may now be procured.

ENQUIRER.—*Honey.*—The sample of honey forwarded is of good colour and of excellent flavour. It has been gathered by the bees from clover, and possibly from the limes.

A. W. HOUSE.—*Driving and uniting Colonies.*—Your plan will do very well. No. 3 may be driven, or bumped if you prefer it. You will not find much brood now; of course you will lose what there may be if you do not wish to transfer it. The honey you can use. See reply to 'Novice.'

ST. DUNSTAN'S.—*Heather.*—Sample enclosed is the real honey heather. You should get honey by the—well, we envy you.

P. P. K.—*Dislodging Bees.*—If they must be got rid of and the roof must not be moved, you might kill them with sulphur, if you can get it alight below them. But are they obnoxious? Can you not get under the roof and hive them?

'FATHER LANGSTROTH, in acknowledging the receipt of the money subscribed to the Annuity Fund, through the *American Bee Journal*, expresses himself thus to *all* who have helped to ameliorate his latter-day infirmities:—"I cannot well express how much the kindness of my bee-keeping friends has done to make me comfortable in my old age. Your kind wishes make what you sent me the more acceptable." He concludes his letter thus:—"May we all meet at last in that blessed fold from which no friend ever departeth." This sentence will strike a responsive chord in every true heart, for he is one of the best and most God-like men we ever met. To spend an eternity with such is worth the "battle of life."'—*A. B. J.*

SHOWS TO COME.

August 29 & 30.—Derbyshire Show at Derby. Hon. Secretary, W. T. Atkins, 6 North Street, Derby.

September 5 & 6.—Surrey. Hon. Secretary, Captain Campbell. Entries close August 30.

September 5–7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 15th.

Business Directory.

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NOTICE.

THE *British Bee Journal* is published by KENT & Co., 23 Paternoster Row, and may be obtained of all Booksellers, and of the following Agents:—

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Editorial, Notices, &c.

SUGARS—FEEDING UP FOR WINTER.

I thank you for replies on 'Sugar,' &c., but should like further light about buying for winter feeding. I have about eighty stocks, so cannot afford to buy the wrong kind. I have used the white granulated sugar in bags in former years, but have lately been led to think that it was principally beet. Of course there was some cane in it, and it was called 'cane' sugar. 1. Please say why the raw sugars are not fit for feeding—would the molasses they contain purge the bees in winter? 2. I am told that many of the cane sugars are refined with acid—is not this acid injurious to the bees? Are all the best sugars so refined? 3. What is the difference between the three qualities of Tate's, or Martineau's, or Lyle's? Are the inferior ones mixed with beet, or do they contain more acid? 4. I have a difficulty in buying the granulated cane here. Are the cubes as good for bees? If so, please give me the name of the best brand, price and suitability considered. 5. Would beet sugar (the white granulated) do for stimulating purposes equally with the best sugars? Why is beet objected to?

All these questions refer to syrup-feeding. Shall be very glad if the answer can be in next issue, as I wish to purchase as early as I know what will be safe to be done. I think many other readers of the *Journal* are anxious to know the safe path for feeding.—G. M. THOMPSON, *Keelby, Ulceby, August 18th.*

We think the season of 1888 may be reckoned as the most disastrous that modern bee-keepers have ever experienced in the British Isles. Flowers have been plentiful, but when in bloom the weather prevented the bees leaving their hives and also retarded the secretion of the necessary nectar in them. In consequence of this, many stocks at the present time are either starving or bordering on that condition. Last week we drove (bumped) seven stocks of bees in straw skeps, the property of a cottager who, in other seasons, has averaged from fifteen to twenty pounds of honey per skep. Although these skeps were full to overflowing with bees—we took four pounds and a half of bees from one having a super on—the total amount of honey obtained from the seven stocks was just a trifle over three pounds; one of them had commenced to succumb, hundreds lying dead on the floor-board. The foregoing we take as almost a general average, in our district, of the condition of colonies left entirely to their own resources. At the present time, therefore, the question left for consideration is, will it pay to feed the colonies the quantity of stores necessary for their winter's consumption? With the frame-hive bee-keeper his answer, given we should think without a moment's consideration, will be 'Yes.' Of this there cannot be two opinions, but with the cottager an outlay of (say) four shillings per hive is a consideration; yet it will pay him. Many of these poor folks have all their work cut out for them to make two ends meet with their present earnings, but to expend four shillings per colony money down, to keep the bees alive is an impossibility, and so the dying out of such colonies during the coming winter will be most calamitous.

Having satisfied ourselves that 'feeding up' is now the only and most remunerative course to pursue, the next question to arise is, What to feed? There is such a variety of sugars on the market that the novice scarce knows which to choose, and even when he does know the description of sugar, the form in which it is to be given to the bees is a stumbling-block. 'Dry sugar feeding,' says one; 'Syrup,' says another; 'Candy,' another; '"Good" candy,' a fourth; 'Place the sugar in a dummy-board,' advises a fifth; 'No, don't; put it on top of the frames,' chimes in a sixth. Well, between all these numerous words of advice he becomes bewildered, and gives the apparent enigma up in despair; and yet each of these advisers is giving sound advice in as far as the different requirements of a colony at a given time necessitate. A little reflection on the part of the bee-keeper will prove to him that dry sugar feeding alone during the coming season will be of no use whatever: the food given must be syrup—good thick cane-sugar syrup; no washy sugar-and-water—we might almost say, water and syrup. We have for some years tried dry sugar feeding, and have found it in some cases very useful, but where a colony has little or no natural stores it has invariably been a failure; times and times have we endeavoured to rear condemned bees placed in fully-built combs upon dry sugar, but always failed. A colony at commencement of winter having six or seven pounds of stores, if fed on dry sugar will die out, or be of little use the next season, but where a colony has just a shortness of stores barely enough to last it until the following spring, then dry sugar feeding will be invaluable, and so will candy, both ordinary and 'Good.' Having then satisfied ourselves that for the present season, at least, syrup feeding is our only resource, it behoves us to consider what sugar to use, how to make the syrup, and how to feed. The first question is, perhaps, of the greatest importance, as the quality of—we cannot call it adulterated—unsuitable sugar for bee feeding on the market is enormous.

Sugar at the present time is obtained commercially from a variety of vegetable substances; of course those yielding the greatest quantity are chosen before others, and as the beet-root yields eight per cent of cane-sugar it is the principal, after the sugar-cane, vegetable requisitioned to supply the tea and breakfast table. Then again cane (sugar-cane) sugars when damaged, or of bad colour, are after chemical treatment transformed into good coloured and sound samples, and used for admixing with beet-sugar; this description of sugar can be mostly

detected by the smell, by an adept by the sight, the chemicals used in the bleaching process giving a most decided acid odour. The smell of beet-sugar to most people, for our own part we should say to all people, is most nauseous, but when mixed with other sugars and refined it loses to a great extent, but not entirely so, this unpleasant odour. Sugars of this description are known in the trade by the term 'pieces.' When feeding bees such sugar should be avoided. Any respectable grocer will give an applicant the information as to what is, or what is not, 'pieces'; they are now selling at 1½*d.* and 2*d.* per pound. Loaf-sugar, best qualities, are almost free from beet, the best being 'Tate's cubes' No. 1 quality, black brand, Martineau's cubes first quality; both these are in hundredweight square, wood cases; their wholesale price now is for 'Tate's cubes,' 21*s.* 6*d.*; and Martineau's 20*s.* per cwt. Dutch crushed, sold now in large quantities for preserving purposes, is not to be recommended, as frequently other than sugar-cane sugars are used in its manufacture. This sugar is packed in bags of about two hundredweight, mostly having a lead seal attached to mouth of bag. It is in irregular-shaped pieces of loaf-sugar, together with large quantities of the dust of same; as its name denotes it is 'crushed' loaf sugar. Other descriptions of loaf-sugar we do not recommend.

We now come to a description of sugar which we have found eminently suited for bee-feeding, not only have we found it useful and suitable in this respect, but we never use any other description upon our table, as its clean sweetening properties are far before loaf and raw sugars. It is called 'granulated.' When this was first brought before the bee-keeping public one manufacturer only produced it, Duncan; it then was known by the name of 'Duncan's Pearl Sugar.' This firm ceased refining, and certain manufacturers in America purchased the royalty, manufacturing and importing large quantities to England packed in barrels of about 238 pounds; unfortunately during the last few months no consignments of this sugar have been received in England. This sugar made a splendid clear thick syrup if half-a-pint of water was added to each pound of sugar and made in the ordinary manner. The foregoing sugar being now beyond our reach, we have found an excellent substitute for same in a granulated sugar manufactured by two firms, viz., Messrs. Geo. Crosfield and Co., of 6 Stanley Street, Liverpool (registered trade-mark C. in a diamond,) and Messrs. Lyle, of Glasgow and London; both these firms guarantee their granulated sugar as perfectly free from beet. These firms, being refiners, will not supply a private individual, but any respectable grocer will obtain the sugar for a consumer; the wholesale price is from 19*s.* to 20*s.* 6*d.* per cwt.; of course, the grocer will require a profit on these prices, the rate would be about 3*d.* per pound in small quantities or in hundredweights about 24*s.* to 25*s.*

Raw sugars, such as Demerara, 17*s.* to 19*s.* 6*d.* per cwt.; Barbadoes 14*s.* 6*d.* to 18*s.* 6*d.*; Porto Rico 15*s.* to 16*s.* 6*d*, will make very good syrup, upon which the bees will successfully winter, but their colour detracts from their merits, as such syrup will stain the combs; this, according to our experience, is the only objection. Demerara sugar is imitated by one firm who colour a white crystallised sugar with some material (a trade secret), this sugar can easily be detected by placing a small quantity in the mouth. After sucking a short time the remainder left in the mouth will be quite white, the act of sucking having removed the colouring matter, which is only superficial. As we do not know what the colouring matter is composed of we object to its being used in the apiary. Porto Rico sugar we find the most suitable for dry sugar feeding as it is very deliquescent, it also, for feeding on top of the frames, binds together with slight pressure, so forming itself into almost a solid cake. 'Good' candy is made by mixing icing sugar with hot honey until of the consistency of putty; this is much too expensive and on account of the same suitable only for the food used in queens' travelling boxes.

The answer then to the question, What sugar to use in making syrup? will be found to be granulated guaranteed by the makers to be free from beet. How to make the syrup is answered also in the above paragraph, and will also be found in any modern manual on bee-keeping.

How to feed is then the next question. The ordinary regulating bottle-feeder will be of little service this season; a fast-feeder must be used. There are plenty of these to choose from, and where expense is of little object any of the boxes with numerous divisions, upon the principle of which most fast-feeders now are made, can be used, but there are other and cheaper methods of making a fast-feeder, the following one we frequently use:—Obtain a 2*d.* tin dish, having almost perpendicular sides, into this place a wood float almost fitting the dish, and having a number of holes, freely dispersed, bored through, we place this on top of the frames, after filling it with syrup, and under the quilts, allowing, by laying pieces of wood across the tin dish, the bees to work up over the edge and take the syrup down. This feeder costs 3*d.* It is not what we call a tidy way of doing it, but it answers as well as the most expensive feeder. The dish is refilled through the hole in the quilt, and will hold about four pounds of syrup. The quilts must be tucked down snugly all round. A good stock with this feeder can be fed up in about ten days or less if weather is warm.

It is very noticeable that beet-sugar is objected to by most bee-keepers, and rightly so. Although beet-sugar is, chemically speaking, cane-sugar, it is vastly inferior in its saccharine properties to sugar made from the sugar-cane. If we place a quantity equal in bulk to what we usually find with sugar-cane sugar sufficient for sweetening a cup of tea, it will be found quite unsuited to our taste, necessitating a further addition of at least one-fourth the original bulk. Bees fed on same do not winter in at all a satisfactory manner, therefore we think that a knowledge as to where to get a sugar free from beet will be of great service to our readers, and likewise a comfort to our poor little dependants through the rigours of the winter 1888-9.

RECOGNITION BY BEES.

We presuppose that in a greater or less degree, nearly all questions affecting the physiology of bee life will also refer to a vast number of winged insects, if not to all their various orders. This is true when dealing with such matters as the use of chitine as building material in the fundamental structure of many insects; or, the clawed feet of Arthropods, or the ring-like arrangements of the bodies of the Annulosæ. So that when we notice peculiarities in the conduct of such insects (other than bees) as live in colonies for mutual support, protection, and defence, it will not be an unfair assumption that such seemingly strange or wonderful behaviour will also be found in the life conduct of bees. Examples of these will also be found in the cleaning out of refuse from nests, carrying out dead, eating eggs, the carrying in and feeding the helpless young with stores gathered by individuals other than the parents. Methods of signalling and summoning members of the community to aid in various undertakings, the appointment of these to this duty, those to that, and so on. Such are a few from a long catalogue of analogies which might be given between the habits of bees and other insects. Their methods of recognition are doubtless not much dissimilar, whether it be the recognition of friend or foe, and whether it be accomplished by the seeing, speaking, hearing, touching, or smelling organs, all of which they seem to have in common with most other animals; and this, by the way, forces into prominence the thought that throughout both the

animal and vegetable kingdoms there seems such a great similarity of parts, that one is constrained to consider one living thing modified into another by a chain of almost imperceptible links.

We wonder at the vast diversity there is existing side by side with so much similarity. We have but to examine the contents and construction of a bit of cellular tissue of both plant and animal, and their methods of carrying on their generations, in order to see a wondrous sameness of idea; or, to compare the lichen with the oak (in the vegetable kingdom), the microbe with the elephant (in the animal world), in order to get a view of the gigantic difference co-existing with the utmost similarity.

Revenons à nos abeilles. Not long ago we had the interesting subject of the vocal organs of bees discussed, and now, let us leave the speaking and hearing senses of bees on one side, powerful but silent factors though they be, and used though they be to some extent as aids in recognition, while we consider the most probable method (as it seems to us) by which our bees know each other as friendly members of one community, or the reverse, by which they recognise their queen and their home.

It is a truism, about which there is now no argument whatever, that the sense of smell in insects is acute to an intense degree; so extremely attenuated is this faculty that some have classed it as a separate sense from that of smelling as we know it. Night and dusk flying insects are guided about in search of food (and each other) by this sense alone, until their organs of sight are brought near the white flowers, which arrest their vision after having attracted them by their perfumed nectar. So probably do coloured flowers in daylight *exactly* treat our honey-bees. We are told of the now common practice of carrying the female of the Lepidoptera, thus ensuring the early and near presence of the male insect, guided to the insect-hunter by its acute sense of smell. So probably in the daytime, in the heights of air beyond the ken of worker bee, do the drones and queens of a district dart about at rapid rates, in a selective chase, which seems intended to be almost perfectly preventive of that very in-and-in breeding which was recently under controversy in our columns; but guided about are the drones by their acute olfactory organs. Within the hive much the same condition prevails we think, that is, in the darkness of the house the sense of smell is the most important factor. We find little or no extra attention paid by the workers to a *virgin* queen, and when they are presided over by such a one, or even are queenless, the robber bee or wasp, the mouse or earwig, finds little resistance made by the disheartened insects who are without a ready and rapid means of telling foe from friend. Immediately, however, our queen begins laying or receives stimulating food and attention from the workers all is changed, and a busy, prosperous community jealously guards the portals of the house.

What is it, then which produces the *volte face?* Simply, in our opinion, the queen herself provides the workers with the means of recognising each other and herself in a manner not unlike that adopted by other insects and by other animals. Solid *fæces* are only dust-like from the egg-layer, but with the ovaries in great activity and prepared liquid food (ready at the top of the tongue of every worker) in large consumption, it is the fact, as is to be expected, that liquid *dejecta* are profuse, the flooring of the hive receiving the greater portion of this kind of *fæces* from the queen, who descends to the lower edge of the comb for defæcation.

This, and this only, in our opinion, gives the honey bee the distinctive and characteristic odour or perfume (for such it is) which enables it to recognise the house and every member of its family. Alter the smell of this dejection by phenol, peppermint, or what not, and we are able to unite strangers. Is not this the magnificent *smell of bees* (not nectar nor pollen) noticeable when all is prosperity in a good stock? Let there be no false delicacy about this matter, or let the collector of Oriental perfumes silence the prudish by narrating the sources of his wares. Many people can bear witness to the scent left on the hands after handling a queen, an aroma which attracts workers, and which is a silent, yet sure, means of enabling a swarm in a dazzling blaze of sunlight to keep together, and to gather round the queen as the nucleus of the new home. In case of robbery we spray the hive with carbolic solution, so that the thieves returning home may have lost their scent; we use scent in uniting, to destroy, for a time, the distinctive 'home-scent,' until the hive is again charged with it; and, believing each hive to have a distinctive smell, by the conduct of sentinels towards wanderers or thieves, surely we may inquire what is the cause of this power of recognition hitherto considered wonderful! It may be urged that formic acid (plentiful in every hive) gives the distinctive odour we speak of, but we find this present with queenless bees; and, if this were the case, every bee would have a *separate characteristic smell*, which would vary by the food it fed on; besides, the ejection of formic acid by angry bees, or the odour of it from a crushed bee, seems to so *alter* the 'home-smell' that there is a rush of bees to the rescue. The smell of poison, therefore, is of such an unusual and exceptional character in a hive, varying in every bee, and producing war instead of peace, that we must look in some other direction for the common cause of bee-recognition—the direction we have indicated. There is no question that bees communicate by tapping on the framework of the head, immediately above the brain, with the antennæ, and also by crossing, rubbing, and touching together these sensitive rods, containing, as they do, the ends of the smelling, hearing, and feeling nerves; yet we have only to watch the behaviour of sentinels towards returning bees, in a busy time, to know that they smell without having time to touch the returning co-inmates of home. True, a satisfactory aroma of incoming honey may be a passport into the hive, as it often is, but bees after a cleansing flight, drones, and young bees, are passed into the lodge with only such examination as could be made by sound, sight, or smell, the latter being, we think, the more correct test of right of entry. All other tests fail to account for that apparently wonderful use of some mysterious method of recognition, an almost (seeming) uncanny application of a hidden faculty.

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USEFUL HINTS.

Weather.—The fine weather, on which we congratulated ourselves in last 'Hints,' proved, alas! evanescent and fleeting. Again, rain, thunder, storms, and an unusually low temperature for the month of August, have been the theme on every tongue. We are tempted to ask how it is possible that 'Trophies of comb and extracted honey, large and beautiful, exciting the admiration of all; not only all large in quantity, but of remarkably fine quality throughout,' could be produced in such a season as we have experienced? To that highly favoured Kent, with its myriad cherry orchards, its countless fields of fruit—sainfoin and clover, and what not?—we suppose must chiefly be assigned the honour of so grand a display at the Crystal Palace Co-operative Exhibition. Well, we are downright envious. Here are our own poor bees unable to store surplus at all—feed, feed, feed, has been our everlasting song all through the summer; our hives are overcrowded with population, but honeyless, simply because the modicum of honey collected during the very few fine days granted to us has vanished in a trice, as food to the hungry producers.

Queens Mating.—Our virgin queens, however, have all mated successfully, about twenty in number, with one exception only, and are increasing the population of their hives as young queens alone can. It is a pleasant

sight to behold the solid sheets of sealed brood furnished by these queens, and destined, we trust, for work in another year more prosperous than the present one.

Swallows and Sparrows.—Swallows are plentiful around us, but we never credited them with the wholesale destruction of bees justly charged upon the sparrows and tomtits. As regards the former, we can fully endorse the indictment brought against them by 'Aged Amateur' in his letter (1771, p. 414, *B. B. J.*). There are no birds more destructive to bees during the breeding season than sparrows, and he who tolerates their nests near his apiary is certainly most unwise. In the *Canadian Bee Journal* (vol. iv., No. 18, p. 345) a serious charge was made and proved by Mr. D. A. Jones, its editor and proprietor, against the martins, as follows:—'Some years since our home bee-yard was the best of all that we had in which to rear and fertilise queens, but for the last two or three years it has been getting gradually poorer until the present, when we have, as reported in our late numbers, lost probably seventy-five per cent of the queens which went out to mate. We were unable, until a day or two ago, to get any satisfactory reason for the loss. The foreman of the apiary had almost given up the rearing of queens here for a bad job, and was giving his attention to the outside yards where from seventy-five to eighty per cent of the queens were fertilised. Yesterday we were putting up a lot of queens, and our attention was drawn to the fact that quite a number of martins were flying about the yard. The sky was cloudy, and the bees could be seen distinctly for some distance flying about in the air. In watching them we noticed a martin catching one on the wing. The thought suddenly flashed through our minds that, perhaps, this was where our queens had gone. Further observation proved conclusively that the martins were, at any rate, making away with a great number of bees. Going to the house we procured our gun and brought down one of the martins which was flying around. On dissecting it we found the gizzard crowded almost to bursting with bees. We shot three more, and found the same results. To-day six more were brought down, and we have proved quite conclusively to our own mind that we have been losing our queens through the presence of these birds. In most instances we found nothing but bees in the gizzards; they have been apparently feeding on our bees for the past two or three years, and we have, until now, been without knowledge of the fact. . . . These birds resemble much in their size, shape, general appearance, and flight, a bird which we found very destructive in the Island of Cyprus. In certain seasons of the year they came from the south in great numbers, and we lost many queens at our apiary at Larnaca. We should like to have information on this point from others.'

We re-echo this wish. Has any English bee-keeper proved that the swallows, or martins, which frequent our homes during the summer season, are equally apicidal in their propensities? This is a most important question for all bee-keepers, and should not be allowed to rest until the full truth has been elicited.

Superseding Queens, which are unlikely to be serviceable another year, should now take place. Those which are in their third year may be advantageously superseded by queens of the present year. The age of every queen ought to be known, which is not so easy of accomplishment as many suppose; since the superseding is often done very quickly by the bees, during the summer months, unknown to their owners.

Fertile Workers. Two colonies in our own apiary have lately made an abortive attempt at supersession abortive in consequence, we believe, of the cold, ungenial weather. In both cases a dead nymph was found in a ripe queen-cell, and in both cases fertile workers were depositing eggs, which apparently induced the bees to continue in full work and to bring home pollen in large quantity. Both colonies are now doing well under imported Italian queens, the fertile workers having been deposed by the usual course of shaking all the bees from the combs at a distance from the stands.

Condemned Bees.—We have several inquiries respecting the practicability of building up condemned bees into colonies, strong enough for wintering, by placing them on foundation alone. So much will depend on the autumnal weather that it is impossible to give a categorical reply. With fine, warm weather, and a supply of one or two built-out combs, and full sheets of foundation for each colony, no doubt it may be done. But 'if 'twere done, 'twere well 'twere done quickly;' there must be no delay. The populations of three ordinary skeps at least, and a plentiful supply of syrup from a rapid feeder, together with wrapping up warmly, and careful protection from robbers, are requisites for success. Some years ago we united three lots of condemned bees in the early part of October, and placed them on full sheets of foundation, feeding copiously with thick syrup, and by the middle of November they had eight combs well drawn out and stored with sealed food. On these they wintered well, and swarmed early in the following spring. The autumn was unusually fine and mild, and bright sunny days prevailed. Condemned bees are also very useful for strengthening weak colonies, but when the population of a hive is sufficient to cover well eight standard frames, it is not advisable to add more bees. Too many bees on going into winter quarters is almost as great an evil as too few.

Brood without Honey.—Many hives will be found, even at this late period of the summer, full of sealed brood, but possessing little or no sealed honey. In such case we advise that no time be lost in feeding up to full winter store. From twenty-five to thirty pounds of thick syrup should be given to each colony. We prefer syrup as food in all cases to dry sugar. Copious feeding will put a stop to breeding, and we do not care for young bees hatched later than the middle of September. All supers, except in the heather districts, should now give place to rapid feeders. Bees at the distance of half a mile from the heather-bloom should store rapidly in fine weather. It is the opinion of many practical men that they collect as much honey at that distance as when placed upon the heather.

Passage-way over the Frames is preferred by many, and 'Hill's device,' which provides this, is much needed in America. Winter loss, however, is far greater there than here, whatever the cause may be, whether climatic or otherwise. We are in favour of allowing no passage above the combs, but of cutting winter passages through them where such are not provided at the upper corners by the bees themselves. This is more in accordance with the natural instinct of the bees than creating a vacuum above. The inducement to build queen-cells in these winter passages we consider no disadvantage, since a better position in the hive than the uppermost and central parts of the comb could not be selected, and we may trust the bees to waste neither time nor labour in the construction of queen-cells when such are not required. Whenever they are required they will certainly be provided, independently of the existence or non-existence of winter passages.

Introducing Queens.—A clerical friend sends us the following, which may interest some of our readers:—

'During the last three years I have introduced queens by removing the old queen and then shaking off the bees from one frame after another on to a board slanting up to the entrance of the hive. I began with the frame nearest to the entrance, and worked backwards, returning each frame to its original position. While the bees are scampering back to the hive, and at about the last frame but one, I throw out the new queen and all her attendants amongst the ascending bees, when they have been invariably received. The nearest approach to failure occurred on

Wednesday last, August 15th, when I gave an imported Italian queen, received from Messrs. Neighbour, at noon to a stock that had been queenless certainly a month, and which had neither brood nor honey. So many of the attendant strangers were killed that I feared much for the queen's safety, but at 3 p.m. I saw one bee carrying in pollen, and now, thanks to liberal feeding, they are busily bringing in plenty, and the queen is safe. Possibly others have tried the same plan, but I have not seen it mentioned, and I certainly think it the most direct, as it involves but a single operation, and has been, in my experience, uniformly successful, to say nothing of saving the attendants' lives.'

Our friend is correct in saying, 'possibly others have tried the same plan.' In Mr. Cheshire's *Bees and Bee-keeping* (Vol. II., pp. 341-2), the method is given *in extenso*, with these concluding words:—'I have experimented on this plan with *many hundreds* of colonies—condemned bees and others—and can truthfully assert that it has *never failed* in a *single* instance.' One word of caution we would add: Do not attempt to practise the method during the daytime when honey is scarce and robbing is rife. At such a time let it be done in the evening, when the temperature is sufficiently high to prevent chilling the bees. But, after all, introduction by the improved pipe-cover cage in the hands of an expert is just as safe, and really occupies less time. Let us advise all who intend making introductions to get them over as soon as possible. There is less danger of queens being chilled and of robbers attacking now than there will be a month hence.

Selected Query.

[22.] *What number of standard frames do you consider best for the brood-chamber? Do you prefer the frames at right angles, or parallel to the entrance? Give your reasons.*

I consider ten frames, standard size, best for ordinary purposes. I do not think it signifies a straw which way the bars hang, provided you can get from side to side of the hive by going round the back. Bees in skeps start their comb from the highest point inside the dome, and at right angles to the shortest perpendicular section through the cavity of the hive. Hence it is possible to determine beforehand which way the combs shall run in a skep.—E. Ball.

I cannot fix upon any specific number, but should be governed by circumstances. A swarm should have as many frames given to it as will give room for all the bees to work on them—one of my swarms this year required twelve frames—and others, from four upwards. Prior to swarming a stock should have as many frames in its brood-nest as the queen and the bees can command, so that there may be no enforced limit to the production of brood and bees; and even during the honey-harvest, when it is good policy to have the queen's power of production under control, great care should be exercised, or swarming out might be the consequence. I prefer the frames across the entrance way, parallel with the front of the hive. Among the very many reasons in favour of that arrangement, the chief is that of convenience for manipulation by the bee-keeper. The question of which is best for the bees has been already answered, *pro* and *con*, and the verdict arrived at appears to be that one way is as good as the other. Assuredly, judging from the way bees act when they take possession of perfectly level domiciles, as, for instance, the spaces between the floor and ceiling of a house, when they almost invariably build across the entrance, from joist to joist, the advocates of the parallel principle gain much support. It being, however, admitted that preference by the bees is somewhat doubtful and that results under either system are equal, I claim that the great advantage the parallel system gives to the manipulator carries the point in its favour. Bees will do their best in any hive under any system, and the best hive and system are those which afford most facilities to the bee-keeper.—C. N. Abbott.

Ten frames, with power to add, on removal of the dummies, yet two more. All frames and surplus work right angles to entrance. To reject or accept the charm entrance-crossing frames do present, we were compelled to a practical trial, finding, after three seasons, the right angle to entrance-frame, in a body of the above capacity, and used as a brood-chamber only, give the far better results. With the latter, power to give or withhold at all times, a more perfect ventilation is to hand; thus influencing a colony's work and purpose in a manner frustrated by any other system.—John H. Howard, *Holme, Peterborough.*

Ten; right angle to entrance in using long hives. They are more easily manipulated, but in using both ways in my apiary I do not find bees do better in one or other.—Tom Sells.

I always use twelve frames for the brood-chamber in the height of the season. In less than this number I do not consider the queen has sufficient cells, and if the excluder-zinc is not used she will deposit eggs in prohibited places. I prefer the frames running parallel to the entrance. I find the manipulation easier, and the hives have a better shape, where twelve or more frames are used.—Henry Beswick.

I consider ten a good average number, but often super on nine, increasing if the colony swarms to eleven or twelve—that is, presuming I return the swarm to the hive from which it issues. I have hives with frames both angular and parallel to entrance, but find no difference as regards the well-being of the bees, but I prefer the parallel for working with. Your hive opens from the back, forming a good screen from the flying bees, and when crates of sections are on the dummy can easily be moved back and frames removed, if desired, without disturbing the colony.—W. Woodley.

About ten, though I vary them at times from nine to twelve in different hives. I have my hives with frames both ways, and can see no difference. I think it is all a matter of opinion, not affecting the bees very much.—John Walton.

I consider twelve standard frames best for the brood-chamber, and prefer the frames to be parallel with the hive entrance, as I consider hives are more easily manipulated and better adapted for the prevention of swarming when the frames are so arranged.—H. Wood, *Lichfield.*

Ten-frame hives are handiest, if more room is wanted double or tier up. So far as bees are concerned I do not think it matters, have wintered about a hundred colonies half each way, with no perceptible difference, but consider right-angled hives rather the most easily manipulated, especially in preparing for winter quarters.—John Edey.

A strong colony with a prolific queen at its head will occupy well ten standard frames. I prefer the frames at right angles to the entrance for the sake of *ventilation, dryness of hive, freedom of passage for working bees, and ease of manipulation.*—George Raynor.

Ten standard frames. The frames should be at right angles to the entrance. The ventilation of the hive is much better; in hot weather the bees at the entrance can control the temperature between *all* the combs; and with a wide entrance in winter there will be no mouldy combs if the back of the hive is raised an inch, so that any moisture or condensation may escape by the entrance. In the *combination hives* (about which we hear less than we used to do), with the frames across the entrance, there are several disadvantages:—The hive cannot be raised at the back to let out the moisture and prevent the rain from pouring in, or the frames will not hang

true and the combs would not be built in them properly; the liability of the entrance becoming stopped by the dead bees falling in front of it, as has occurred with me; the frames hanging across the entrance and stopping the ventilation; the combs getting mouldy; in manipulating the front combs you have to reach over all the others. The majority of most advanced bee-keepers both here and in America use hives with frames at right angles with the entrance.—JOHN M. HOOKER.

BEE-KEEPERS' VOCABULARY;

OR, GLOSSARY OF TECHNICAL AND SCIENTIFIC WORDS USED IN WORKS UPON BEE-KEEPING.

Bar super.—Boxes fitted with bars, placed on the top of hive and used by the bees for storing surplus comb honey.

Barley-sugar. *n.*—A confection, usually in twisted sticks, made by boiling sugar till it becomes brittle on cooling, formerly in a decoction of barley.

Barren. *a.* and *sb.* (*O. Fr. baraigne*, fr. *Celt. brah*, a sprout, and *une*, without.)—Unproductive, sterile; incapable of producing young; void of vital germs.

Barricade. *n.* (*Fr. barricade*, fr. *barr*, a bar; that which bars out, blocks up, protects, or defends.)—Applied to a construction of propolis and wax erected by bees to reduce size of entrance, and thus exclude enemies. Barricades are frequently found in districts where the death's-head moth is prevalent.

Basilar membrane. (*mod. L. basilaris*, fr. *L. basis*, base, and *L. membrana—membrum*, a member.)—The membrane in the compound eye of the bee, found at the base of the great rods, which they perforate in their connexion with the bundle of optic nerve fibrils situated beneath.

Batten. *n.* (fr. *Fr. biton*, a stick.)—A piece of squared timber, not more than 7 inches broad and 2½ inches thick; a bar or strip nailed or glued across anything composed of parallel boards to hold them together, give strength, and prevent warping; a ledge; a clamp.

Battened. *p. pl.* and *a.*—Formed of battens; strengthened with battens.

Bean. *n.* (*Sax. bean.*)—Name given to that part of the male organ coming immediately below the *ductus ejaculatorius*, from its resemblance to a bean, and from its enveloping the spermatophore like the outer skin of a bean. By some writers it is called 'lentil.'

Bees. *n. pl.* (*A. Sax. beo.*)—Various forms: To thirteenth century, *beo;* thirteenth to nineteenth centuries, *bee;* fifth century, *by;* fifth and sixth centuries, *be;* sixth century, *bey. Pl. bees;* also to twelfth century, *beon;* thirteenth to seventeenth centuries, *been;* fourteenth century, *bene, bien;* sixth century, *beene.*—Applied to the different species of insects of the genus Apis; also in scientific use in a general way, including all insects of the honey-gathering division of the sting-bearing Hymenoptera, and comprising two families—the Social Bees or *Apidæ*, and Solitary Bees or *Andrænidæ.*

Bee-bike.—A nest of wild bees. (Provincial, North.)

Bee-bird. *n.* (*Sax. bird* or *bridd*, a chicken.)—Name given in some localities to the spotted fly-catcher (*Muscicapa grisola*).

Bee-birds. *n. pl.*—Used by some old writers for bees. Bees are still occasionally called bee-birds in some out-of-the-way rural districts.

Bee-bob. *n.* (*Gael. bab*, a tuft or cluster.)—A bunch or cluster of dead bees strung together, forming a ball about the size of an egg, and used as a decoy for inducing a swarm to settle.

JOTTINGS BY 'AMATEUR EXPERT.'

'Mel Sapit Omnia.'

The August number of the *American Apiculturist* is solely from the pen of Mr. Henry Alley. I have 'boiled down' a few jottings from its columns for the benefit of the readers of the *B.B.J.*

CHEAP QUEENS.

He is advertising his best American-bred Italian queen-bees at a dollar each (4*s.* 1½*d.*) Lucky Americans, to get a good queen in July for a dollar! Early in the spring I tried to induce him to send us in England queens at that price, as the postage on 'samples' is very small. The trouble is with the Post Office, who refuse to pass live bees through the post. Here is work for the committee of the B. B. K. A., to get the absurd restrictions removed.

FEEDING BACK

Mr. Alley is opposed to; he says it will not pay for the time, trouble, and waste of honey involved. The partly filled sections are of far more value in early summer to induce the bees to take to the supers readily. In this I agree with Mr. Alley, as well as the recent remarks of our own Editor in the *Journal*. It will not pay.

DO BEES MIX HONEY IN THE CELLS?

Last year a party of bee-keepers at my house were discussing this point over our 'Bohea.' I never remember seeing anything on the point in print till this month's *Api*. Mr. Alley says only 'one kind of honey is stored in any one cell;' thus one will be full of clover, another basswood, another buckwheat honey, and so on.' I have found, especially late in the season, a great diversity in the flavour of the honey stored even in one section. But a microscope is a more certain guide in this matter than the palate, as the origin of any honey may be traced by the minute pollen grains it contains.

BEE VEILS.

Mr. Alley says, sooner or later the eyes of all those who use bee-veils will be damaged by the constant straining caused by looking through 'the fuzzy meshes of a cloth bee-veil.' His remedy is to use a good smoker and no veil. The veil I use has been my companion for nine years, and will last nine more with proper care. It was a little costly at first, being composed of the finest silk net, but it gives one no consciousness of anything being between the eyes and the object; and when not in use I can carry it in my waistcoat pocket. I certainly should not advise any one to do without a veil, but some of the cheap veils sold are a great obstruction to the light, I admit, and possibly may prove harmful in time. Next to silk net give me Dr. Pine's wire gauze veils, only they are bulky and require a hat-box to carry them in if you are on an expert's tour.

HONEY BOARDS AND QUEEN EXCLUDERS

Are not used by the manager of *Api*. An attempt is being made to 'boom' them in England, after having been discouraged for a few seasons. It looks as if some one had an 'axe to grind' in the shape of a new invention. It is very wicked of me to make such a suggestion, I am aware, but I have not had a single queen in my supers again this year, and the Americans are beginning to do without them just as we are asked to rush back to them again.

REQUEENING AFTER A SWARM HAS ISSUED.

Three days after a swarm has issued Mr. Alley says if you cut out all the queen-cells, and run a fertile-laying queen in at the entrance, she will always be received and much valuable time will be saved. I have done this successfully in two cases this season; consequently I think the probability is as he says.

Getting Bees out of Sections.

Several cases of sections were removed from the hives just before sunset and placed in the bee-house, standing on one end. A cage containing a queen was nailed in a box, and the box was then inverted on the section cases. In the morning every bee had left the sections, and most of them were quietly clustering on the queen-cage. The box was then placed out-of-doors, the queen and cage removed, and all the bees at once proceeded to fly home to their respective hives. Had it been desirable they might have been utilised as an artificial swarm.

Some Queer Things about Bees.

These I had better give you in Mr. Alley's own words adding a thought of my own as we proceed:—

'I have a number of queens in cages that are used in the yard as decoy queens. These queens I do not feed nor take any care of, except to shelter from the hot sun and cover up when it rains. The cages are placed on a hive, or upon the handiest object, when I am done with them for a time. As soon as left, the bees find them and furnish all the food and take all the needed care. Some of the queens have been used in this way for nearly a month, and they are very bright and lively, and will stand it for a month yet.' (I do not see the object of 'decoy' queens.—'A. E.')

'Bees do not seem to notice a virgin queen; yet, if they are deprived of one, they seem to miss her and feel as bad as though she had been a fertile queen.' (That is my experience.—'A. E.')

'I have watched the worker, queen, and drone bees when they seem to be struggling to emerge from the cell, and though they had hard work to crawl out, the bees would not offer the slightest assistance nor would they take any notice of them; but should one of those bees die in its attempts to leave the cell the bees would at once remove it. Rather poor judgment in the bees.' (No! nature abhors a weakling, but tolerates it in the highest order of animals.—'A. E.')

'Should a bee be born with defective wings he is at once invited to go outside the hive, as his room is more valuable than his company. This seems heartless; yet a bee without wings is of no account. "The survival of the fittest" seems to be the motto of the hive.' (Exactly. —'A. E.')

'When a bee goes and finds some honey after the general harvest is over, on his return home he makes known the fact to his companions that he has it by shaking his whole body as though trying to remove some dirt from his wings. If more stolen sweets are to be had at the same price, the bee quickly unloads and starts for more plunder, and at the same time several other bees will follow. By the time three or more bees have loaded and return, the whole colony begins to become excited, and in a very short time the roar of the bees indicates that something was wrong in the apiary. By following the hum of the bees the apiarist can easily find the mischief the bees are about. I should have said in the beginning, that when the first bee returns loaded the other bees seem to detain it at the entrance and try to make him tell where he obtained the stolen property.' (I have frequently noticed that a bee loaded with *honey*, as distinct from *nectar*, is detained at the entrance by the guards.—'A. E.')

If you wish to know 'How to prevent excessive swarming;' or about 'Feeding new swarms:' or, 'How to get drones late in the season;' or, how and when to 'Form new colonies;' or, 'How to find a queen;' or, 'Do bees know a stranger?' or, 'How to keep brood-combs during winter;' or, 'Preparing for winter;' and a host of other things, you must get *Api*, and read it for yourselves, or ask for further information on any point you wish to know about from—Amateur Expert.

ASSOCIATIONS.

THE SHROPSHIRE BEE-KEEPERS' ASSOCIATION.

The Annual Exhibition of this Association was held on Wednesday and Thursday last, upon the occasion of the great Floral Fete at Shrewsbury held under the auspices of the Shropshire Horticultural Society.

The comprehensive prize list attracted a fair competition, and brought together a capital display of bees, honey, hives, and appliances; and we are pleased to state that, although the Association was dissolved three years ago, yet, through the energy and exertions of the present Hon. Secretaries and Committee, it now appears to be in a most satisfactory condition: this, the second show, held under the new *régime*, being a very important exhibition. The great speciality in the apiarian department was the institution of a series of lectures, which were given in a seated tent; and when it is remembered that 40,000 persons attended the fete, it must be admitted that there is ample scope from which to induce recruits to the humane teachings of modern bee-keeping. The lectures were delivered at advertised hours by Mr. S. J. Baldwin, the subjects taken being, 'Bee-keeping Past and Present, with comparative results, and illustrations, showing also the Horticultural Value of the Bee;' 'The Bee-hive: its Mysteries;' 'Superstitions and their causes and resulting stumbling-block;' 'The various Races of Bees;' and 'Bee-keeping as an Industry: for the Amateur, for the Cottager, with Hints on Profitable Management and Marketing Honey.' These lectures were repeated each day, and attracted numerous and appreciative audiences, Mr. Baldwin treating each subject in a masterly and exhaustive manner; his usual fluency, pleasing address, and 'plain unvarnished tale,' being most attentively heard; the many resulting queries put to the lecturer at the close of each demonstration proving the intelligent manner in which the information was conveyed and received.

The exhibits of honey compared but indifferently with the enormous display of last year, 760 lbs. being staged only as against six tons, thus showing that Shropshire has also experienced the effect of the bad season. As regards the exhibits generally, the display must be considered as very satisfactory, bearing in mind the short spell of summer weather we have experienced. The collection of appliances was far in advance of anything previously attempted in the locality. Eighteen hives were entered in the Single Hive Open Class, Mr. Redshaw's First R. A. S. E. Nottingham Hive again securing first prize, a well-made hive by Mr. Palmer, of Wellington, Salop, built closely following Mr. Redshaw's pattern, being placed second. Messrs. Abbott of Southall secured first prize for the collection of appliances with an excellent display. Mr. Baldwin of Bromley being second, a special third being awarded by the judges to Mr. Whittingham, Shrewsbury, thus showing the importance of the class. Mr. Lewis, of Oswestry, who, we heard, has been appointed an agent for Mr. Meadows, being commended; over twenty new inventions appeared in this class, many being of real utility. The whole show afforded a real practical lesson in modern bee-keeping to the novice and 'skeppist;' and this, taken in conjunction with the lectures, really proved a most instructive exhibition, the tent being entirely thronged the whole time. The comb-honey exhibited by Mr. W. G Preece, whose name we remember in this connexion at the Indian and Colonial Exhibition at South Kensington, and the run honey of Mr. Godman, and a particularly attractive show stand of Mr. Palmer's, being much admired; while so great were the inquiries round the Observatory Hives, that it was almost necessary to tell off an attendant to comply with visitors' demands. The handsome show case of the Association's

silver and bronze medals to be awarded at the exhibition, added to the attractiveness of the exhibition, and especially also the nicely-mounted specimens of 'honey-yielding plants' contributed by Messrs. Abbott.

The judges were Thomas W. Cowan, Esq., and H. Clegg, Esq., of Loppington Hall, Shropshire, whose awards gave every satisfaction.

We are pleased to congratulate the Committee of the Shropshire B. K. A. upon the results of their labours, not forgetting also that to the Hon. Secs. great credit is due for their exertions on behalf of the Shropshire bee-keepers. Below is the official list of prize takers:—

Honey.—Class 1—For the best exhibition of comb honey in sections to exceed 60lb., silver medal and 1*l.*—1, W. G. Preece, jun., Shrewsbury. Class 2—For the best 48 lb. sections of comb honey, silver medal and 15*s.*—W. G. Preece, jun. Class 3—For the best 24 lb. sections of comb honey, silver medal and 10*s.*, for the second best ditto, bronze medal and 5*s.*—1, W. G. Preece; 2, S. J. Baldwin, Bromley, Kent. Class 4—For the best exhibition of run honey to exceed 60 lb., silver medal and 10*s.*—1, John Palmer, Wrockwardine. Class 5—For the best 48 1-lb. bottles of run honey, silver medal and 7*s.* 6*d.*; for the second best ditto, bronze medal—1, A. Godman, St. Albans; 2, T. R. Horton. Class 6—For the best 24 1-lb. bottles of run honey, silver medal and 5*s.*; for the second best ditto, bronze medal—1, S. J. Baldwin; 2, T. R. Horton. Class 7—For any novelty in honey of sufficient interest—Not awarded.

Appliances, Hives, &c.—Class 8—For the best hive suitable for modern bee-keeping, 1*l.*; for the second best ditto, 10*s.*—1, Charles Redshaw, Leicester, won with first prize Nottingham hive, B.A.S.E.; 2, J. Palmer, Wrockwardine; h. c., W. G. Preece, jun. Class 9—For the best hive as the foregoing, the work of an amateur, 10*s.*; for the second best ditto, 5*s.*—1, J. Palmer; 2, J. Bradley. Class 10—For the best collection of apiarian appliances, 1*l.* 10*s.*; for the second best, 15*s.*—1, Abbott Brothers, Southall, London; 2, S. J. Baldwin; special third prize, T. Whittingham, Shrewsbury. Class 11—For the best honey extractor—1, bronze medal, W. H. Lewis, Oswald Road, Oswestry. Class 12—For the best section rack—1, bronze medal, S. J. Baldwin. Class 13—For the best 1-lb. sample of super-foundation—1, bronze medal, W. H. Lewis. Class 14—For the best new and useful invention—1st, bronze medal, T. Whittingham.

Bees.—Class 15—For the best exhibition of live foreign bees with queen, in Observatory hive—1, silver medal, W. H. Lewis; 2, Abbott Brothers, London. Class 16—For the best exhibition of live British bees with queen, in Observatory hive—1, silver medal, J. Bradley, 2, W. G. Preece, jun.

Artisans' and Cottagers' Classes.—Class 17—For the best exhibition of not less than 24 lbs. of comb honey, 15*s.*; for the second best ditto, 7*s.* 6*d.*—This class was not filled. Class 18—For the best 12 lb. sections of comb honey, 10*s.*; for the second best ditto, 5*s.*—Not filled. Class 19—For the best exhibition of not less than 24 lb. run honey, 10*s.*; for the second best ditto, 5*s.*—1, Richard Watson. Classes 20, 21, 22, and 23, were not filled. (Cottagers' classes.)

YORKSHIRE AGRICULTURAL SHOW.

Huddersfield.

Among the many very interesting exhibits at this show none was more popular among those interested in the matter than that illustrating bee-driving. In this department Mr. R. A. Grimshaw, the Hon. Sec. of the Yorkshire Bee-keepers' Association, gave lectures in the bee-tent at intervals, with the assistance of Mr. W. Dixon, Leeds, their expert. The life-history of the bee, worker, queen, and drone, was sketched, and the manipulation of the bar-frame hive and the obtaining of honey by means of sections and the extractor, were explained. Due prominence was also given to the advantages of modern or scientific bee-keeping, in which the lives of the bees are preserved, over the old method of keeping bees in the straw skeps of, what we hope are, bygone generations. One point was made quite prominent, that if we were not repaid a single drop of honey it would still be a duty we owe to the community to keep bees for the sake of the benefit they confer upon the fruit, clover, bean, and other crops. It is a pretty well conceded fact that the cross-fertilisation of plants gives us a better quality of seed and a larger volume of the surrounding fruit; the assimilation of nitrogenous matter by fertilised seeds is more rapid and profuse when the pollen is brought from another plant, than when, so to speak, self-fertilised. The humane aspect of scientific bee-keeping was laid stress on—that now-a-days bee-keepers preserve the lives of their bees; whereas by the old methods they were condemned to perish in the sulphur pit. There is no doubt about one thing, that bees can be handled without much fear of being stung, for Mr. Grimshaw handed round, outside the bee-tent, frames covered by bees, queen, drones, and workers, exhibiting to the spectators the varying phases of bee life, without receiving a single sting, and this on a sunny day without any protection of veil or gloves, the only intimidant being smoke used by Mr. Dixon. This has the effect of frightening the bees into gorging themselves with their stores, when, the honey sac being full, they are disinclined to sting. The collection of bee-appliances was one seldom met with, even at the Yorkshire Show, and consisted of every known convenience for dealing with the various exigencies of bee-life. Mr. A. C. Jemieson, York, had one of his cottage hives and his 'York' champion hive. The latter is a remarkable combination, and contains every modern improvement. He also showed his 'Dreadnought Hive,' and a 'A 1' doubling-hive, besides a collection of articles of use to the bee-keeper. Mr. John Dixon, of Ayton, showed his improved patent bar-framed hives and super-crates, section-boxes for straw hives, and a rather cleverly-conceived bar-lifter. Mr. W. Dixon, Leeds, had on view a complete stock of hives and appliances, and a novelty, worked by bees in the hive, giving a good representation of the words 'God save the Queen.' He had a decidedly novel rustic bee-hive also on the stand. Messrs. Abbott Bros., London, too, had a good show of useful appliances. Among the prize-winners Messrs. Abbott, London, took first honours for a bar-frame hive, not exceeding 15*s.* in value, and Mr. A. C. Jemieson, York, took second place. The class was above the average. In the next class for bar-frame hives, not exceeding 10*s.* in value, the honours were also taken by the same exhibitors: but in straw hives Mr. William Dixon, Leeds, comes in second, Messrs. Abbott still retaining the premier position. They were also successful in another class of straw hive, Mr. John Dixon, Ayton, coming in second. In bar-frame extractors Messrs. Abbott are first, and Mr. William Dixon second; but in extractors for sections on any principle, the honours are reversed. In the class for samples of honey in pound-sections, Mr. C. Atkinson, Tockwith, had an easy victory, securing both first and second prizes.

The following is the list of awards:—

Bar-frame hive, not exceeding 15*s.*: first, 1*l.*, Abbott Bros., Southall, London; second, 10*s.*, Arthur C. Jemieson, 26 Colliergate, York; reserve, William Dixon, 5 Beckett Street, Leeds. Bar-frame hive, not exceeding 10*s.*: first, 1*l.*, Abbott Bros.; second, 10*s.*, Arthur C. Jemieson; reserve, William Dixon. Straw hive, flat-topped, with hole not less than three inches wide: first, 1*l.*, Abbott Bros.; second, 10*s.*, William Dixon; reserve, Arthur C. Jemieson. Straw hive, flat-topped, with hole not less than three inches wide: first, 1*l.*, Abbott Bros.; second, 10*s.*, John Dixon, Great Ayton; reserve, William Dixon. Exhibit of bee-furniture; first, 1*l.*, Abbott Bros.; second, 10*s.*, Arthur C. Jemieson; reserve William Dixon. Honey-extractor, for bar-frames: first, 1*l.*, Abbott Bros.; second, 10*s.*, William Dixon; reserve, John Dixon. Extractor or sling, for sections on any principle: first, 1*l.*, William Dixon; second, 10*s.*, Abbott Bros. Sample of honey in six 1 lb. sections: first, 1*l.*, and

second, 10s., C. Atkinson, Tockwith, York. Super honey in other form: second, 10s., William Dixon.

The Rev. J. Lingen Seager, of The Grange, Stevenage, Herts, acted as judge.

TODMORDEN FLORAL AND HORTICULTURAL SOCIETY.

On Saturday, Aug. 18, the thirteenth exhibition of this Society was held on the Scaitcliffe estate. There was a good display in all classes, and the awards of the judges appeared to give general satisfaction. A new feature in this year's programme was the bee department. For this the public are indebted to the exertions of Mr. G. H. Greenwood, Post Office, Eastwood, and the enterprise of the Todmorden committee. Todmorden is situated partly in Lancashire, and partly in Yorkshire, but by mutual arrangement between the Honorary Secretaries of the two County Associations the district has been assigned to the care of the Yorkshire Bee-keepers' Association. The tent on this occasion was in charge of Mr. W. Dixon, Leeds, who displayed specimens of all the appliances requisite for modern bee-keeping. He also exhibited a small observatory hive well stocked with bees, and gave practical illustrations of the manipulation of the bar-frame hive. Lectures on bees and bee-keeping were given at intervals by Mr. R. A. H. Grimshaw, Hon. Sec. of the Yorkshire B.K.A., and Mr. J. Dodgson, Hon. Sec. of the Craven District B.K.A. Each lecture was attended by a large and interested audience.

BEE AND HONEY SHOW AT WOTTON-UNDER-EDGE.

A show of bees, hives, and honey, was held in connexion with the Wotton-under-Edge Horticultural Society, on Tuesday the 21st August. Although the weather in the morning assumed a threatening aspect, it gradually cleared off, and the weather was everything one could wish for. Owing to the complete failure of the honey crop in this district, it was thought by some that the exhibition would be a failure, but bad as the season was there was staged about two hundredweight and a half to the surprise of a good many; but it was chiefly last season's honey. This was the first bee show ever held in this town. The honey tent drew crowds of people through it, the stage being very tastefully decorated with plants in bloom kindly lent for the occasion by the Rev. E. M. Farquhar. During the afternoon Mr. W. D. Slade, Hon. Secretary to the county, gave lectures and manipulations with the bees in the driving tent. About 300 people paid for admission to witness the mysteries of the hive.

Following is a list of awards, all the classes did not fill:—For the best twelve 1-lb. bottles of extracted honey: 1st, Mr. E. Robinson; 2nd, Mrs. Perrett; 3rd, Rev. N. W. Gresley. For the best twelve 1-lb. sections: 1st, Mr. W. Fowler; 3rd, Mr. Davis. The best 6 lb. of extracted honey: 2nd, Mr. Davis. For the best bar-frame hive made by a cottager: 1st, G. Venn; 2nd, A. J. Brown; 3rd, W. Griffin. Bees in observatory hive: 1st, W. Griffin; 2nd, A. J. Brown; 3rd, W. Griffin. Wax: 1st, W. Griffin; 2nd, G. Gunston; 3rd, A. J. Brown.

We should like to take this opportunity of thanking Mr. Slade for his valuable services.—A. J. Brown, *Local Secretary.*

Bees on the Raid.—On Wednesday, the 22nd inst. a great number of bees made a descent on the confectionery stalls in Bishop Auckland market-place and literally took possession of them. Business was stopped, and the owners of the stalls took to flight. It is presumed that the cold and inclement season had deprived the insects of their ordinary source of sustenance, and that they were driven by famine from the country into the town.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to "The Editor of the "British Bee Journal," c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C." All business communications relating to Advertisements, &c., must be addressed to Mr. J. Huckle, Kings Langley, Herts (see 2nd page of Advertisements.)

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the Letter, as well as the page at which it appears.*

THE MINORCAN QUEEN.

[1773.] I am glad to be able to say that the one gentleman of the B. B. Committee who took sufficient interest in the introduction of 'new blood' into England to express a willingness to receive a young Minorcan queen, has duly received the first that saw daylight in this country. Fear of the weather we have all been deploring, caused me to offer princesses only, and, fortunately, my moderation was well grounded, for had I offered fertile queens I should have been in a difficulty, for out of fourteen other princesses duly hatched in full hives, I can only find one that has proved fertile, and many have apparently departed. I was successful in my efforts to induce the original queen to deposit a large number of eggs in drone-cells, and they duly became larvæ, but I could not persuade the worker bees to rear them, although they were kept well supplied with food—the cold, wet weather was evidently too much for them. A second batch of queen-cells has been raised in the hope of remedying the queen failures, but continuance of unfavourable weather may spoil this venture, as it has spoiled so many in this unparalleled season. I must beg to be excused from attempting to enter upon the merits or demerits of the Minorcan race, they, in common with all others, having had no chance of showing of what they are capable. There is, however, time for things to mend, even though they become patchy, and it may become possible to give assurances of some of the Minorcan characterstics.—C. N. Abbott, *Southall, August 25th.*

DIVISION BOARDS.

Their Utility and Historic Use in Bee-keeping.

[1774.] Division-boards should have a place in every well-regulated apiary. In fact, every well-managed apiary will include the division-board as a necessary adjunct to successful handling of bees. The division-board fits into a place in the handling of bees which no system of management can fill without them, hence they are a necessity.

This necessity in their use has grown out of the system by which bees are kept, an understanding of their ways and workings calling into requisition many things, as moveable frames, the extractor, section-cases, honey-sections, and the various appliances which render bee-keeping profitable, and, among them all, the division-board ranks as important a feature as either of the requisites named.

Introduction of Division-boards.—Although the use of division-boards in the apiary as a factor of prominence dates back but a few years, it may be known to some of the more advanced apiarists that as long ago as 1852 a patent was taken out on division-boards by Rev. L. L. Langstroth. This was thirty-six years ago; but the division-board, we think, did not very generally come into use till quite recently. Mr. Langstroth's board was made as follows, and will be found described on page 376 of his book, *The Hive and Honey Bee*:—

"One piece 18½ × 9⅝ × ⅞, each side of each end made

made ¼-inch bevelling, for easy adjustment. One piece $\frac{5}{8} \times \frac{7}{8} \times 19\frac{7}{8}$ nailed on the first piece, like the top-piece of the moveable comb-frames. By this divider the size of hive can be determined at will.'

This reveals the use the division-board was first put to, to contract or enlarge the size of the hive. And this is an important matter when rightly considered. While there are various ways in which division-boards are useful in handling bees, perhaps the two most important advantages derived from their use is, in preparing colonies for winter, and in adapting the size of the hive to the strength of the colony in spring.

Preparing Bees for Winter.—In preparing for winter, it is known to be best to allow the bees only space according to their numbers. That may be to occupy four, five, or six frames. We all know that it is easier to heat a small room in winter than a large one, and so this principle applies to the bee-hive. And again, we do not want to depart from established rules in building hives as to size; were we to do so, we might lumber our premises with a large number of different-sized bee-hives, of no use only as occasion called for wintering, and occasionally for nuclei colonies in summer.

If we use division-boards, the question of making hives to carry eight or ten frames is easily solved. It is an advantage to have some hives which will carry ten frames, as side-storing can then be practised if one likes that way, and in working for extracted honey it is an advantage to use ten frames in the lower storey, as a prolific queen will occupy that number and leave the upper storey clear of brood. Then, if such hives are desired to work for comb honey, and five to six frames in the brood-chamber are found sufficient, the contraction is easily made by using division-boards, or the same contraction made for wintering, and, if deemed necessary, the spaces between the walls of the hives and division-boards can be filled with some material which is non-conducting to cold, as leaves, chaff, &c.

Use of Division-boards in Spring.—In rearing large numbers of bees early in the season, queens are induced to early breeding from two especial causes, viz., heat and a supply of proper food. A requisite of spring care is to reduce the size of the brood-nest to just as small compass as the bees can comfortably fill. Having done this in the fall previous, while the bees were more numerous, crowding them upon six frames, we will say, April may find the bees only able to cover two frames comfortably. The division-board upon each side has been the means of contracting their domicile, enabling the bees to more easily warm up their house; and the consequence is, the queen will commence laying earlier by some weeks than if the whole space of eight or ten frames had been given the colony in the fall.

Often winter and spring dwindling will be such that two frames will be adequate to the requirements of the colony. It is, then, of the highest importance that the division-boards be used so that the heat may be utilised, and by that means a few bees be enabled to do in small contracted quarters, in the way of rearing brood, what double the number could not do in three or four times the space.

Division-boards in Surplus Chambers.—In case of extracting, division-boards are indispensable to place over the brood-chamber and grade the number of frames as they are put in from time to time. It is a fact known by all practical bee-keepers, that bees, in order to build combs, must keep a high temperature where they are working, to keep the wax in a proper consistency to admit of being manipulated into combs. Hence, if the surplus room is much larger than the bees can occupy, because these conditions of necessary heat are waiting, comb-building will often be delayed for the necessary amount of bees to engender sufficient heat. By the use of division-boards, combs or sheets of foundation can be supplied as the bees require them, and are able to occupy them.

Construction of Division-boards.—How to properly construct division-boards is of some importance. Solid boards answer very well, but such are liable to warp and make their use not quite so handy as those that are true. Those made of thin material and the interior filled with chaff, have advantages. Whatever kind are used, it is of importance that the ends have some material of a yielding nature tacked to them, so as to allow this board slight friction to hold it when crowded into place.—L. F. Abbott, *Lewiston, Maine.* (*Read at the Maine Convention.*)—*American Bee Journal.*

WHAT BECOMES OF THE PART LEFT IN THE FLESH?

[1775.] I am requested by a subscriber to explain how the bee-sting is removed from one's skin when broken off in the act of stinging. He suggests that, if it does not work out, it must be absorbed by the system; in which case he thinks that some bee-keepers must be largely composed of stings.

The skin consists of two layers—the outer scarf skin, or cuticle, also called epidermis, and the inner true skin, or corium, also called *cutis vera*. The outer skin is made up of what is known as scaly, or pavement epithelium; that is, it consists of innumerable minute overlapping scales. The inner scales contain pigment in their substance, and thus the colour of skin. The albino has no pigment, and hence his skin is transparent, and looks pinkish, as we look right through and see minute blood-vessels filled with blood. The inner skin consists of an outer part, which, like the cuticle, has no nerves, and so is not sensitive to pain or touch. This is made up of white fibrous tissue and small involuntary muscles that contract if the skin is chilled, and drawing the skin away from about the hairs forms the well-known 'goose flesh.' Beneath this layer, which is known as the reticulum, because of its intercrossing fibres, is the papillary layer. This is the very inner part of the skin. It takes its name from the fact that little teat-like processes—papillæ—push up against the outer part of the skin. The ridges seen on the inside of our hands are but the elevations of these papillæ. Into these papillæ from beneath come nerves and blood-vessels. Thus from here comes all nourishment to the outer skin; and here is the sensitive part of the skin. Thus, a bee to hurt us must push its sting through the cuticle and reticulated part of the corium till it pierces the papillæ, where the blood receives the poison, and the nerves twinge with its venom.

Now, as we understand the anatomy of the skin we can see how the sting, if broken off in the skin, is loosened and liberated. The scaly, or outer skin, is constantly being worn off. When we bathe, the water often is clouded with these minute scales. The snake sheds its scales once a-year; but we are doing it all the time. As these scales are constantly wearing off, any minute portion of sting which is held in them is also worn off and separated from the body. Even if a small portion of a sting is caught by the reticulum, the part would probably suppurate and loosen the sting, as is done with slivers that enter and are caught and held in the skin. We thus see that a bee-keeper is not made up of stings, by any means.

In case of porcupine quills, which are barbed like a bee's sting, they are thrust through into the muscle, so that every move of the muscle pushes them; and as they cannot go back, they are pushed on. Thus a porcupine quill may pass some distance through the unlucky animal which has caught them in its tissues.—Prof. A. J. Cook, *Agricultural College, Mich.* (*Gleanings in Bee Culture*).

ROBBING.

When once Started it is very Difficult to Control.

[1776.] When the honey-flow is over, and there is very little to be gathered, there is danger of one colony of bees robbing another. If, in an unguarded moment, a pilfering robber is allowed to enter a hive and escape with a load to its own hive, the bees there will be quick to detect it, and the robber will go back with a dozen excited bees determined to have some of that honey or *die*, and if the entrance is not strongly guarded they will be apt to get it.

Then a still larger crowd comes next time; the excitement runs high; battle ensues, and the bees of other hives are drawn into the fuss, and the long and short of it is, they make a 'run' on the unfortunate colony and clean it up in a few *minutes*. Like a lion that has tasted blood, their fury is aroused, and they are ready for other victims, and woe unto the colony that is unable to withstand the first assault.

To guard against such disastrous proceedings, we must be particular in opening hives during a dearth of honey-flow, and not let robbing *commence*. We must see that there are no cracks whereby a prowling robber-bee may sneak in to get the coveted treasure. Then keep the entrance contracted to correspond with the strength of the colony, so that they may be able to guard it. The man that has one real good case of wholesale robbing on his hands will never forget it, and for the time being at least he will wish he never saw a bee.—J. M. Jenkins, *Metumpka, Ala.* (*American Bee Journal*).

THE SEASON.

[1777.] The long winter of '87-'88, with its accompanying east wind that continued far into the spring (?), militated severely against the progress of our colonies. Nevertheless, swarming began on May 19th, when three strong lots were hived, and on the 24th three more came forth, and were duly housed, and after that swarms and casts came in irregular order far into July, the last issuing on the 9th of the present month. All our casts were hived among three, four, or five combs, filled (?) with syrup, with one frame of foundation, for the amusement of the bees prior to the young queen assuming matronly duty. Nevertheless, two lots went wrong at the beginning of July, deserting their hives and leaving small patches of sealed brood. In June about 60 lbs. of honey were extracted from two hives, and twelve sections taken from another, and at that time it would have been easy to have taken several hundredweight of extracted honey, but being busy, and not *wanting* it at the time, it was left with the bees, and when it was wanted, it was gone. During the summer, or rather the summer months, we have melted 3½ cwts. of loaf-sugar into syrup, nearly the whole of which the bees have consumed, and it is highly probable that another 5 cwts. will be required to fit the bees for wintering, as we have no autumn yield of honey in the neighbourhood. Our bees got nothing from our crocuses or arabis in spring, and nothing from the limes and white clover in summer. They have been very busy on limnanthes, comfrey, and blue veronica. These plants cannot be too highly spoken of, the last two being perennial, and giving no trouble in cultivation. Feeding in hope has secured us plenty of bees, combs, and brood, but honey is not to be found in the apiary.—C. N. Abbott, *Southall, August 25th.*

SEASON IN LINCOLNSHIRE.

[1778.] Judging from those districts in Lincolnshire which I have visited, and from reports which have reached me, I fear the present season will have to be recorded as one of the most disastrous both to bees and bee-keepers that has been known. Early spring forage was all but a blank, and where feeding was neglected, stocks were at a standstill or losing ground, and since there have only been catch days for what little nectar may have been secured. At the present time stocks are sorely in need of the syrup-bottle, and quite rare cases where I have found supers occupied. With the skeppist swarms have not been numerous, though plenty of bees. Clover late, but has been abundant, unfortunately to little purpose. Sun and warmth being absent, the limes, usually of short duration, were alike of little help. All is now over for this season, and where the bee-keeper's harvest will be the question.—R. R. Godfrey.

P.S.—Not much honey to be had this year at 6*d.* per pound, I guess.

SWARMING.

Do Bees Select a Habitation before Swarming?

[1779.] Although the above caption is destitute of originality, the question is a much-mooted one, judging from the correspondence, *pro* and *con*, that has appeared in the bee-periodicals during my acquaintance with the subject. As I have been much interested in the diversity of opinion by those who have given their testimony with reference to bees 'seeking a home before swarming,' I feel prompted to add my mite to the general fund of observation and experience.

Eight years ago I had a powerful colony of black bees in a box-hive. The colony had wintered excellently, and as the season was favourable, by the middle of June they began to 'hang out' in large masses, which the knowing ones admonished me to be a *sure* indication that I might expect a swarm from the colony at any time.

As I had but three colonies at that time, I watched them closely for about three weeks. The morning of July 8th, 1880, was cloudy with a heavy fog, and as I could not work at haying, I took my axe and went to repair some fence about a hundred rods from the apiary. Being busy with the fence, the thought of bees had deserted my mind, until Old Sol from a rent in the clouds warned me of my forgetfulness. It may be truthfully imagined that I took a bee-line for the apiary, double-quick and—more.

On my arrival, I found my long-looked-for swarm clinging to the under-side of a large limb, on an old-fashioned apple-tree. The cluster was about two feet long, and must have contained at least ten quarts of bees—a black, seething mass, presenting to a novice of my experience a serious job of hiving, with the experience of the hiving of but one swarm to 'fall back on.'

After 'fixing up' as per instructions, viz.:—Pants tucked into my boot-legs, thick coat on and buttoned up, thick woollen mittens on my hands and a couple of yards of musquito-netting enveloping my head, I tackled the swarm with brush and basket. A couple of swoops with the brush landed about two-thirds of the bees in the basket; the remainder went back to their hive.

After emptying my captives on a sheet in front of the hive that I had prepared for them, and getting them started in, I went into the house to 'unharness,' and cool off. In a short time I returned to the yard, to note the success of my efforts; and while I stood complacently observing laggards disappear as they entered the hive—*presto!* out they all came with a rush, some returning to the old hive, while the rest, after circling in the air awhile, clustered on a high limb.

I took them down on the limb and put them into the hive again; but they would not stay. On coming out, they circled around a few minutes, as if to marshal their forces, and took a bee-line for the woods, some ten rods distant. After following the rovers twenty rods or more, and marking their course, I concluded to give up the pursuit and postpone the concluding act of the drama to a more favourable opportunity, deciding that

the weather was extremely hot, and that two quarts of bees were not worth further effort.

On the third day after leaving the swarms, I took the line where I left it, and after following the directions a short distance, I found my absconders passing in and out of a knot-hole in the trunk of a decaying hemlock, twenty-five feet from the ground, not more than forty rods from the apiary.

On reviewing the course afterwards, I was satisfied that the swarm went in a direct line from where they were clustered when I attempted to hive them, to the tree in which I found them, impressing me very strongly in the belief that they had selected a home in that same tree prior to leaving the maternal domicile. Had I kept the swarm in view, from the time they left the bee-yard until they reached their abiding-place, the proof of pre-emption—a 'fore-thought'—would have been very conclusive.—J. F. LATHAM, *Cumberland, Maine* (*American Bee Journal*).

BEE-KEEPING.

That keeping bees should pleasure bring,
May little wonder cause,
For honey is the sweetest thing
Produced by Nature's laws.

And Nature's products far outmatch
A chemist's highest art;
The bees the inspiration catch,
And each fulfils its part.

Without a ruler, yet all rule,
With one design possessed
Each does its duty to the full,
And works as seemeth best. DUNBAR.

Echoes from the Hives.

Fairspeir House, Ascott, Oxford, August 24th.—The honey season here is completely over. My six stocks have yielded just thirty-four sections, which was collected during the first few days of June. On looking into the hives a short time ago, I found the two heaviest, or rather strongest, had just one *pound each only* of winter stores. I had eight swarms, but I turned them all back except one, so I have now seven stocks for 1889. I have just bought 140 pounds of sugar, and have begun to give them twenty pounds each in tin square feeders. Strange to say, my worst stock last year was my best this year. Unless the cottagers feed them up, I imagine there will be few bees in this district next season. I have 'weighted' several stocks round here, and the heaviest has only been sixteen pounds, hive included. I find that a hive will take down twenty pounds of sugar boiled into syrup in a week. The reason I was able to get any sections filled at all in a season like this was owing to my having them full of comb left over from last year; there was, therefore, nothing to do but to fill them and seal up.—J.

Wareham, August 24th.—I have taken twenty sections fairly well filled from one of my hives, which is *very* strong, and, I believe, has not swarmed at all this year, but my other hives have given me nothing except two swarms from one of them. That hive has, however, still a few sections in a frame at the back, and I hope I may get three or four of them filled.—A NOVICE.

Weston, Leamington, August 27th.—Seeing there did not appear much chance for honey, on Bank holiday I took off hundreds of 1-lb. sections,—not full though, but so empty that there were none worth trying to get any honey from, so I just took them fifty yards away under a tree, and left the bees to leave them of their own accord, and take away whatever they could, which was very small indeed. Now the chief thing to do is to get them in order for winter; I have laid in heavily of pure cane granulated sugar, and have commenced feeding up—no little job for fifty or sixty stocks. When it is nice and warm, bees are on the alert, everywhere looking out for anything sweet. I have had no sections filled at all, and have only taken about forty pounds of extracted. It appears the Canadians and Americans are about as bad off for honey as we are. Misery loves company.—JOHN WALTON.

Hythe, Southampton, Aug. 27th.—This has been a wretched season so far here as elsewhere. My bees are still working the blackberry blossom, and also, I doubt not, the heather, of which there is plenty within a couple of miles; but I fear I shall not find much increase now to the contents of my section-boxes.—G. S. COXWELL.

Cumberland.—Our Wigton correspondent sends us the following:—'From personal inquiries made from bee-keepers in Wigton district we find that the yield of honey is not half of what it was last year; in fact, in some instances, the yield is not one-fourth. Mr. John Hall, who has by far the largest apiary in the neighbourhood, secured over 1000 lbs. last season, and this year he has only got 160 lbs.; and though he has not held quite so many stocks this season, the decrease has been fully what is indicated above. Other bee-keepers report about the same average diminution. This is attributed to the cold east winds and wet weather which have prevailed during the spring and early summer, when the bees make most honey. It was all the more tantalising to see the abundance of white clover in this district which the bees are said to utilise to a great extent, the cold wet preventing the bees from leaving their hives, and when they did venture out they succumbed to the inclemency of the weather before they could return. For a few seasons two or three bee-keepers have moved stocks to the neighbourhood of Wedholme Flow, where there is abundance of heather, but this year one of them assured us that he did not think it worth the trouble, as the bees made very little heather honey in the best of seasons. This appears rather strange, as it is well known that in the mountain districts bees have filled their skeps and hives in two or three weeks when the weather has been favourable. Wedholme Flow is of a marshy nature, and whether this makes the difference is a question that will have to be settled by the observations of others interested. It appears to be of the same variety of heather that we see on the Cumberland fells, and is a beautiful sight when in full bloom or approaching it as at present. Perhaps some of our correspondents and bee-keepers could afford enlightenment on the point.—*West Cumberland Times.*

[The above opens up an interesting question on which we shall be glad to have the opinions of our readers. May it not be that in low situations early frosts, or, at any rate, low night temperatures, may curtail the secretion of honey? Again, the breezy hill-side gains vigour much earlier in the day than the marsh.—ED.]

Over Stowey.—In 'Echoes' for 16th August I see a notice of a swarm on 3rd August. Last year I had a swarm on the 14th of August; it did well, and was amongst my strongest stocks last spring.—R. W.

Rerlin House, Donegal, August 25th.—Not having sent you an Echo from my Apiary this year before, I trust it will not be out of place to do so now, when the honey season is nearly over, except with the heather. There is no doubt it has been a bad season, but I am happy to state I am a great deal better off for honey than some accounts I see from different apiaries in other places. The weather here has been very changeable throughout the whole honey season, two or three days fine, then three or four days wet, cold, and stormy, just

as bees were beginning to work well; but the only day that there was a smell of honey about my apiary was on 29th July, and only lasted the one day, but it has been pretty favourable since then up to date, with occasional heavy rain and blowing. I have extracted up to 400 pounds so far. I have six hives with top storeys on, that is, with eight frames (Langstroth size) above and eight below. I selected two of the strongest, that is with the whole sixteen frames covered with bees, and in the last week of July I extracted about 30 pounds of honey from them, and in doing so took the queens away, and allowed them to raise young ones. I extracted on the 15th inst. 47 pounds, and on the 22nd inst. I again extracted 52 pounds, and all sealed and from the top storey; the young queens had just commenced to lay. It is an astonishing fact, that each of those hives stored up to five pounds of honey a-day, for the 19th was showery and blowing hard, and they did not work much. I have twelve hives up at the heather and hope to get about 200 sections, that is, if the weather keeps fine. I have thirty hives altogether, and I shall be nearly half-a-ton of honey short of what I should have had if it had been as good a season as last year; but I must be thankful for what I have taken.—GEORGE TURNER.

N. Searsmont, Waldo County, Maine, U.S.A.—It has been a very poor season for bees here so far; unless 'Golden Rod' yields well we shall have to feed heavily.—H. E. MILLER.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

REV. J. W. RICHARDS and FAR NORTH are referred to 'Useful Hints' for replies to their queries.

G. M. T.—See article in this week's issue. The sugar forwarded will be found most suitable.

VICTORIA PARK.—*Artificial Swarm.*—Yes; we see you 'have made another start,' but you finish badly by not signing your letter. You are too late to make an artificial swarm such as you propose: the queen would in all probability not find drones flying by the time she came forth. Better far let the hive remain as a strong stock ready for next spring.

CHARLES WHITING.—*Honey.*—1. The sample of honey is of very indifferent quality, and we think it is only fit for feeding purposes; it is neither clear nor crystallised, and, being a year old, this, together with its almost total absence of flavour, would preclude its being considered of much commercial worth.—2. Your plant is a species of Rest-harrow (*Ononis spinosa*, Linn.), it belongs to the Order *Leguminosæ*, and is not of much value as a honey-yielder.—3. The recipe you give is a very good one, but why not use your honey alone?

EARWIG.—Earwigs are, we acknowledge, a great nuisance to the bee-keeper. They, however, do no harm to the bees. They seek the covering of the quilt simply for warmth. They are creatures gifted with wings, and therefore the means adopted for the prevention of things that crawl will not prevail with them. The best remedy against them is to keep stocks strong.

W. WILLIAMS.—*Winter Passages.*—As you desire, we will forward your letter to Mr. Simmins, who will give you the special information you desire. One of the requirements for wintering well is having winter passages through the combs. Each comb should have a hole ¾ in. in diameter cut through it to enable the bees to reach their stores in the adjoining combs without the danger of being chilled by leaving the cluster to go round the ends of the frames. 'Hill's device' is an American contrivance by means of which the bees are enabled to cross over the combs in cold weather, but we prefer the winter passages.

A NOVICE.—There are no symptoms of foul brood in the piece of comb forwarded. There was nothing in the cells except some pollen and cocoons of larvæ. Having killed your queen, it only remains to unite the stock to another.

T. NIXON.—*Sugar.*—The larger-grained is the best.

H. W.—M. Leriche's book may be procured, by order, through Messrs. Hachette, foreign booksellers, King William Street, Strand.

R. AULD.—*Queenless Hives.*—You have a fertile worker. Either carry the frames some distance from present stand, shake the bees off, and they will return to the hive minus the fertile worker, or unite them to another stock. The temper of your bees points to them not being pure Ligurians. For pure, unadulterated 'cussedness,' give us the progeny of a Ligurian queen crossed with a black drone of lively proclivities. They are A 1 with their business ends.

FLUTE.—*Plants.*—Nos. 1 and 2 are varieties of heather, and not of much value as honey-plants; but No. 3 is *the* heather, and most excellent as a honey-producer.

G. S. COXWELL.—1. *Transferring to Clean Hives.*—Yes, at once. 2. *Uniting weak Stocks.*—Do it now.

JOHN CHITTON.—*Cleaning Hive.*—Make a rough box, in which hang the frames with bees, and place it on the stand of the hive, taking care the entrance is in the same direction as the present one. Cover up warmly. Now cleanse old hive; when dry re-transfer combs and bees, reducing brood-nest to, say, seven frames: feed up quickly for winter. In the spring introduce once a-week a fresh frame of foundation in centre of brood-nest; at the same time remove such outside combs as are not in use. Regular stimulative feeding must be given to encourage them to draw out the foundation.

F. I.—*Shaving Combs.*—We should certainly do as little as possible of this so late in the year. They are generally made level when extracting about the beginning of August. If you did it now you would probably start robbing. Your proposed method is correct. We will try the 'agent' in the way you name first opportunity. We have tried a few drops of it on the brown paper in our smoker with most excellent effect when dealing with 'impulsive' bees.

SHOWS TO COME.

September 5 & 6.—Surrey. Hon. Secretary, Captain Campbell. Entries close August 30.

September 5-7.—Lancashire and Cheshire Association at Lancaster. Hon. Secretary, Mr. W. Lees McClure, The Lathoms, Prescot. Entries close August 15th.

Business Directory.

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Exchange Column.—Sales of Honey and Second-hand Goods.—Intended to aid Bee-keepers in the disposal of Bee-produce and Appliances for which they have no further use. Terms: Twelve words and under, Fourpence; for every additional Three words, One Penny extra.

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DRIVEN BEES Wanted by Dr. WARD, Priory House, Danbury, Essex, at 1/- per lb. on rail. None from districts affected with Foul Brood need apply.

SELLING OFF.—Remaining Stock of Bee-keepers' Goods. Must be Cleared this Season. List of Reduced Prices free on application to THE BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch Street, London, E.C.

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NOTICE.—For Sale, or Exchange for a Safety Bicycle Keyless Watch, or a Breech-loading Gun, an entire Apiary with every Appliance, as a whole or separately. Address LEWIN Jun., 29 King William Street, E.C. D 35

FOR SALE.—*British Bee Journal* from May 1883, to December 1887. Clean, unbound. Price 10*s.* 6*d.* Address FEWTRELL, 130 Cumberland Road, Reading. D 36

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THE
BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

LESSONS OF 1888.

It may be safely asserted that there is scarcely a bee keeper to be found who can recall such a disastrous honey season as the one now rapidly drawing to a close. Incessant rain for weeks, accompanied by abnormally low temperature at the very period when a genial high temperature, with a corresponding good honey-flow, should, according to our usual experience, have gladdened our hearts and encouraged us on to greater efforts in future years.

The last three seasons have certainly been sufficiently trying to damp the ardour of anyone except a thorough-going bee-keeper. In 1886 it was necessary to feed regularly until the 21st June, when a good honey-flow was obtained from the limes. Then 1887 may be chronicled as the 'dry year,' followed, as we know, by wet '88.

Doubtless very many will firmly resolve to have nothing further to do with bee-keeping, because at present they find the cash balance on the wrong side. To most of these faint-hearted ones we expect we must say farewell. It is far from pleasant to part with any who have at any time belonged to our ranks, and we would impress upon such that nothing makes success so sweet or so well deserved as a previous repulse.

To turn to those who, more constant to their old love, are determined to bid for success in future years, we would offer a few hints which may assist them onwards. The great variation between 1887 and 1888 has shown up most effectually any structural defects in hives. Bad work now stands self-condemned, and honest manufacturers must rejoice thereat. No doubt in the early days of the present era in bee-keeping, very high prices were charged for appliances, but then it must be remembered that the demand was comparatively small. Recently the rage has been for cheapness, and we would not deprecate this craving so long as there is a fair margin of profit left for the maker as shall enable him to live and pay 20s. in the pound. Those commencing bee-keeping are apt to consult the various catalogues, and select the lowest priced hive they can find quoted. This is a serious mistake. Better have one stock well and comfortably housed than a number dwelling in badly-made hives that will not keep out either wet or cold. Good hives are to be had at a very reasonable price, and it is certain that if bees cannot be made a success in good hives they never will in bad ones. Under no circumstances have a hive that does not provide for keeping the inmates *warm*. Bees in a cold hive will not be so strong by the middle of April as one in a warm hive on the 21st March if we have our usual cold spring weather, and in a season like the present this means success or failure, according as our stocks are ready or all behind.

In feeding we are much afraid many of our readers are still failing to get the full benefit they might have. To many it may seem too much trouble, and, in fact, almost needless to continue to feed so far into the season as is sometimes necessary; but we have now in view a good sized apiary of over sixty colonies, having a fair average location, which, owing to neglect of feeding in the spring, has, up to the present, yielded only about forty pounds of super honey. Nothing was wanting except judicious feeding to have insured a good harvest of clover honey, there being abundance of good clover close at home; but, although the warning was given more than once, it was neglected, and then, during the few days the weather remained favourable, although the bees did their best, they could not yield a good return. Did the mischief and loss end here, it would not be so bad, but during the sudden bursts of high temperature, robbing has occurred, and some stocks have succumbed, while those still alive will require very heavy feeding to keep them alive through the winter. Surely three such seasons as we have just passed through should impress upon every one that feeding is one of the most vital necessities as regards the well-being of our stocks. We acknowledge this with regard to every other living thing we keep, then why not with our bees? Is it our greed lest we lose a pound or two of honey? If so our very greed is defeating its own desire. If from carelessness, then we deserve our non-success, and should at once cease to be apiarians, or mend our ways from this day. Excuse we have none.

GLEANINGS.

In the *Prairie Farmer* Mrs. Harrison says that it is better to secure all the choice honey possible first, and then make the increase, if desired, afterwards. A large amount of surplus and a large increase in colonies cannot be secured at the same time. Choice queen-cells should be saved during swarming time, and the young queens reared can be used in making colonies after the flow of honey is past. Italian bees often swarm even before starting queen-cells, and then the old colony builds and rears queens. It is good management to save all the cells built in a choice colony so as to have good vigorous queens to introduce wherever inferior stock is discovered. Before any of the queens emerge the colony can be divided up; a frame containing a queen-cell, and covered with bees, can be removed to a hive and confined to one side by a division-board, and if there is not enough honey in it another frame containing honey should be given. When the young queen is out add a frame of eggs and larvæ. This will furnish employment for the bees, and if the queen is lost on her bridal tour furnish the means of rearing another. Where increase is the object sought the after-swarms can all be hived and built up into strong colonies before cold weather.

In the *American Apiculturist*, G. W. Demaree says, respecting introducing queens, My advice to beginners in bee-culture is not to be carried away by the direct method of introducing queens. The idea that one queen can be removed and another slipped into her place without the bees recognising the change is visionary in the extreme. The safest way is to cage the queen and depend upon your own judgment and intelligence. This is simply business.

At the Ohio State Convention, according to the *Bee-keepers' Magazine*, C. T. Smith said that comb honey will remain a luxury. It will sell fast when cheap enough, and though a good business can be done in it for the bee-keepers and dealers its production will be only of secondary consideration as compared with that of extracted honey. Since manufacturers make use of extracted honey, it bids fair to become a staple article; nothing will hinder it from becoming such, unless the prices put on will place it beyond the reach of manufacturers. Its prices will be controlled more or less by the prices of sugar syrup, which cannot be otherwise.

In the *Prairie Farmer*, Mrs. Harrison says, A farmer complained that a neighbour's bees robbed his roses by taking away the sweet from their heads, and yet he was in debt to the bees for the clover. The Indians call white clover the 'White man's tracks,' better the 'bee's companion,' for when bees are introduced into a neighbourhood the modest heads of the white clover are soon nodding in the breeze. A bee-keeper of Evans Town said lately to the writer that when he commenced keeping bees, there was very little white clover there, now it is spreading everywhere.

The Bee-keeper's Magazine says it is always well to wear a veil in handling bees, as the eyes are too valuable members to run the risk of losing.

Respecting the hexagon form of the cells we find it stated in *Murray's Magazine* that there is a growing tendency to accept a modification of Buffon's explanation of the origin of cell-structure. Buffon attributed the regularity of the cells to mutual pressure, in illustration of which he packed a closed vessel with dried peas and filled up the interstices with water. The peas, which were thus caused to swell, assumed under the pressure which resulted, the form of more or less accurate geometrical figures. Perhaps a still better illustration of this principle of inter-action is seen in soap-bubbles. If a little soapy water is placed in the bottom of a tumbler and air be blown into the water through a tube until the upper part of the glass is full of bubbles, the hexagonal form which these bubbles assume under mutual pressure, and the trilateral pyramids at their bases will be readily seen. Not that these geometrical figures are the same as those which the wax assumes, but they illustrate the principle. For at the temperature of the hive, the wax pared thin by the smooth-edged jaws of the workers, has all the plasticity of a fluid membrane.

In *Gleanings*, G. M. Doolittle cautions bee-keepers about queens that are balled. He says: As all know, a queen is rarely stung during the first few hours after she is balled, and as a rule, no fears need be had about a queen being harmed in handling this ball of bees in liberating her; but I have found to my sorrow that, after she is liberated, if a single bee of the ball is allowed to get back to the queen, it will sting her. To illustrate: without giving the particulars of dispersing the bees in the ball, except to say that it can be done by dropping the ball into water or by smoking, I will relate a little experience. A valuable queen was balled; the ball was dropped into a caldron kettle of water, near the edge of the kettle. The queen and bees crawled on the rim to the kettle, and, as I was about to pick up the queen, a single bee caught her and stung her in an instant. Again, a ball of bees was smoked on a comb, and as the clinging bees let loose, the queen, with two still-clinging bees, fell off the comb to the ground, the bees letting go as they struck the ground, one immediately ran up and stung the queen.

JOTTINGS BY AMATEUR EXPERT.

'Mel sapit omnia.'

Artificial Combs.—Few inventions have been a greater boon to modern bee-keepers than comb foundation, but the utmost limits of possibilities are not reached yet. We are promised perfect combs, worked out by a machine, so light that they take no more wax than natural combs, and the queen lays in them just as readily. This is not the old bogus honey yarn in a new dress, but comes from a genuine bee-keeper who hopes to benefit the craft by his invention, and not to produce 'comb honey innocent of bee mediation.' Our friend, Mr. D. A. Jones, has had a sample sent him, and reports favourably on it.

Honey Adulteration.—The above has made me think of the *A. B. J.* and its wrath at the mere mention of Professor Wiley, who has paid dearly for coining a joke. The Professor had scarce appeased the wrath of Mr. Newman by confessing it was a joke, and doing penance for coining it, before a new set of enemies (?) appears on the field. These are the St. Louis Society of Microscopists, who assert that of the 'several hundreds of samples of honey examined the majority of them were adulterated with such stuff as grape sugar, glucose, &c.' The *A. B. J.* says, in reply to this, 'The fact is, that honey produced on different soils, and under various climatic conditions, differs so much in its constituent parts that no one can *with positive certainty* decide upon its purity!' (The italics are the *A. B. J.'s.*) I have a dim idea that Mr. Otto Hehner, our esteemed analyst, has somewhere said quite to the contrary, and will undertake to prove the purity or otherwise of any sample. I have a friend who is a clever microscopist, and has a good instrument, who says he can with the microscope. The American chemists and the American microscopists both say honey is adulterated, yet the *A. B. J.* persists in fighting the men of science, and denying the charge. If the *A. B. J.* will fight the adulterators with as much vehemence we shall have less 'mixtures' on our market under American brands and names than we have at present.

Echinops.—I have three kinds of this thistle in my garden. *E. Sphærocephalus*, the 'Chapman honey plant' of our American friends, is nine and ten feet high with me. My soil—a strong loam—seems to suit it. It has suffered sadly from the late storms, but it blooms pro-

fusely and seems to yield large quantities of nectar. The bees crowd on it even till very late, in fact a few stay out all night, a thing I never knew the honey-bee to do on any flower; whether they get intoxicated or gorged I cannot say, I think the latter as if the night has been dry they regain activity when the sun shines on them and return home. *E. globosa* is only five feet high, and the bloom is like its larger friend, only it is intensely blue in colour. It yields honey and is visited largely by the bees. It is far prettier and just as good a honey yielder as the 'Giant.' *E. vitro* is only about two and half feet high, it does not bloom so profusely as the other two; it is also blue in colour, but not nearly so pretty as *Globosa*, and the bees pay it but scant attention by comparison with the others.

Mr. Benton and the Carniolans.—I first had Carniolans in 1881. They were all true to colour. I saw several also that belonged to a friend, and never saw a 'banded' bee amongst them. None of these came from Mr. Benton. The past three years he has given them more attention, and we have been getting them 'banded.' Moreover, the first cross between a black and a Carniolan were always quiet. This is so now occasionally; but, on the contrary, sometimes they are as fierce as any of the crosses with the yellow bees. The Italians were not ruined in temper till Cyprians were taken to Italy to improve the colour of the gentlest bee then known. Mr. Benton has told us that yellow bands sometimes appear amongst the native bees in Carniola. I hope he is not to blame for it, for I do find that some of the 'mongrels' so marked are not as amiable as the earlier and truer marked Carniolans used to be, and it would be an infinite pity that such a good race of bees should be ruined by improvement (?).

Honey Classes at the Co-operative Festival.—The Co-operative Festival has gone the round of the papers. I have seen it reported in provincial papers coming from Cornwall, Wales, Scotland, and the Midlands, but no mention was made of the 'honey classes.' This is not only very lax on the part of the 'fourth estate' men, but a great loss to bee-men generally. I fear the reason is because these classes were omitted from the official catalogue of the exhibits, as one of the fraternity of ink-slingers inquired if the honey exhibits were a part of the show, and why they were omitted. Perhaps the Secretary, Mr. Broomhall, can tell us why?

Aluminium.—Aluminium is one of the metals that are practically non-corrosive. Now that the cost of production has been so reduced, I should think it is brought within the reach of some of our manufacturers. It is very light; being a good colour it looks well, and I imagine would not be so readily propolised as zinc. Who is to be the first in the field? It is a metal with a great future before it.

Extracting.—Mr. Allen Pringle concludes a very able article in the *Canadian Live Stock Journal* thus:—'The extractor is generally used a little too freely and too late in the season. And this is one of the causes of winter losses. Extracting from the brood-chamber (which ought to be discouraged) is still practised, and those who do practise it ought not to let their selfishness override discretion in fall-extracting. A safe rule is always to leave 30 to 40 lbs. of honey in the brood-chamber after the 1st of August. Extracting too closely in the fall with the intention of making up any shortage by feeding is unsafe and unwise.'

A Bee-master out of Harness.—Since 1881 Mr. C. N. Abbott has been gradually dropping out of harness. First he sold the *B. B. J.*, which led to his dropping his pen except at rare intervals. More recently he gave up the whole business at Southall to his sons, only giving advice when needed; but he found himself dying of *ennui*, so he has taken over the home apiary at Fairlawn, under his own personal control, remarking to a friend, 'I could not live without my bees.' I can quite understand it. He may now be seen again as of yore adorned with veil and enveloped in smoke, and the picture of contentment. Long life to him! says—Amateur Expert.

BEE-KEEPERS' VOCABULARY;

Or, Glossary of Technical and Scientific Words used in Works upon Bee-keeping.

Bee-bread. *n.* (*Sax. breod*; food in general.)—Pollen, or a compound of pollen and honey consumed by the bees; original meaning in ancient Saxon: Honey-comb with the honey in it. It is also applied locally to certain plants yielding nectar, viz., white clover and borage. Also the common name for *Trifolium pratense*.

Bee-but.—Name for bee-hive in Somersetshire.

Bee-cap. *n.* (*Sax. cappe*, a cap.)—A cap or hood furnished with wire gauze to protect face from attacks of bees; a small straw super placed on skeps; also called *cape* in some localities.

Bee-climbers. *n.* (*Sax. climan* or *climban*, to climb.)—Steel-pointed iron stirrups, strapped to the leg and used for ascending trees (United States.)

Bee-cluster. *n.* (*Sax. cluster*, a crowding together.)—A mass of bees which hold on to each other by means of their anguiculæ; the compact mass into which bees form themselves when in a hive.

Bee-culture. (*Sax.* fr. *beo*, a bee, and *L. cultura*, tending.)—A hybrid word. (See *Apiculture.*)

Bee-culturist. *n.*—Same as above. (See *Apiculturist.*)

Bee-dress. *n.* (*Fr. dresser*, to make straight.)—A dress so arranged as to protect the entire person from the stings of bees.

Bee-driving. (*Sax. drifan*, to drive.)—Compelling bees by rapping on the sides of the hive to leave their combs and ascend into an empty box or hive placed above.

Beedom. *rare.*—The realm of bees.

Bee-eater. *n.* (*Sax. hitah, eatan, ytan, etan*, the act of eating.)—A genus of birds (*Merops*), which devour bees and flies. (See *Apiaster.*)

Bee-fertilised. *a.* (*L. fertilis*, fr. *fero*, I bear.)—Applied to flowers having the pollen conveyed to the stigma through the agency of bees.

Bee-farming. (*Sax. ferma*, food.)—Cultivating bees on a large scale as a source of income.

Bee-fold. *n. obs.* (*Sax. fald*, a wall.)—An enclosure containing hives.

Bee-forage. *n.* (*Fr. fourage*, food or fodder.)—Trees, flowers, and plants of every description, furnishing materials usually collected by bees.

Bee-flora. *n.* (*L. flos, Ger. floris*, a flower.)—The whole of the plants visited by bees, and growing naturally in a district or country.

Bee-flower. *n.* (*L. flos*, a flower.)—A flower loved, visited, or fertilised by bees; also a flower resembling a bee, the bee orchis (*Ophrys apifera*); old local name given to the wall-flower.

Bee-feed. *n.* (*Sax. fedan*, to feed.)—Name given to the wild buckwheat of California (*Eriogonium fasciculatum*).

Bee-garden. *n.* (*Sax. guard; Goth. gards*, an enclosed space.)—An enclosure containing bee hives in; an apiary. (See *Bee-fold.*)

Selected Queries.

[23.] *Which is better for practicable purposes, a rack of sections—say, twenty-one 1-lb. sections—in one rack, or three sets of sections, twenty-one in all, seven sections in each case?*

The single rack of twenty-one sections for the 'bread-and-butter' bee-keeper. The set of three having seven sections each for the 'gentleman' bee-keeper having plenty of time and *some* money.—W. M. Graham.

In *careful* hands the separate boxes of seven sections each have some advantage over the large boxes containing twenty-one sections, *e.g.* (1), each box can be manipulated separately, disturbing fewer bees, and exposing the top-bars less when removal is necessary; (2), the sections are kept square by the sides of the box; (3), the recent improvements introduced by Mr. W. P. Meadows make them especially useful in working for show sections. But, on account of the ease with which they are disarranged, of the difficulty in wrapping them up warm, and of stopping the draughts between them, they cannot be recommended to any but skilled bee-keepers in preference to the larger boxes of twenty-one sections.—Edwin Ball.

For all practical purposes in the production of comb honey in a large apiary the narrow crates, holding seven sections each, are a mere bagatelle. What is wanted is crates of a standard size, holding, say, twenty-one sections, which can be tiered up to any desired number, according to the requirements of the season. The set of three sevens may, and probably would, suit bee-keepers with small apiaries of two or three colonies, but any large apiary, run for comb honey on commercial lines, requires practical appliances, not toys.—W. Woodley.

I used to use small racks, seven in a row, but did not make them deep enough for tiering up, so since tiering has been in vogue, I only use racks of twenty-one sections. I rather think the small cases would entail more trouble in taking full sections off.—John Walton.

For practical honey-getting I prefer cases that will hold twenty-one sections. Seven, fourteen, or twenty-sections can be used in these at pleasure by stopping the spaces at the bottom with pieces of wood or zinc, and so preventing the bees getting into the sections.—John M. Hooker.

The divisible racks are more convenient for manipulation, and conserve the heat better; but, unless very accurately made, they are less adapted for tiering up than the indivisible racks. The seven-section cases can also be used separately, which is an advantage at the beginning and end of the season.—George Raynor.

For all practical purposes I consider one rack containing twenty-one 1-lb. sections the best. With such a rack the sections can be more readily removed than can be done with three sets of sections each.—H. Wood, *Lichfield*.

Three sets of sections, being interchangeable, are better than a single rack, but if there be likelihood of taking more than twenty or thirty sections, I should use racks.—R. A. H. Grimshaw.

Twenty-one sections in one rack or seven hanging frames of three sections each.—Amateur Expert.

For taking sections early in the season from fruit-blossoms and hawthorn, I consider the three cases of seven sections each the better, and would recommend this class of crate for general use where only two or three hives are kept. But for a large apiary, where time and expense are a consideration, I should prefer the larger crate, as taking less trouble to work, and with a good honey-flow giving equally good results. For finishing off the nearly completed sections late in the season, I have found the Raynor crate very handy. It is always advisable to have the four walls of your crate the same depth, and not, as some makers send them out, with the fourth side little more than half the depth of the other three. This pattern is most inconvenient when tiering up.—C. Atkinson, *Tockwith*.

ASSOCIATIONS.

NORTH-EAST OF IRELAND BEE-KEEPERS' ASSOCIATION.

The Fifth Annual Show of bees, honey, hives, and appliances, in connexion with the North-East of Ireland Bee-keepers' Association, took place in the large hall of the Young Men's Christian Association, Wellington Place; and considering the many difficulties which beset bee-keepers at present, owing to the exceptionally unfavourable character of the season, the exhibition must be designated a success. The attendance during the day of those interested in bee-keeping, and also of the general public, was large, and the different exhibits were examined with a great amount of interest.

The total number of entries in the catalogue was eighty-four, but, owing to various causes, some of the exhibits were not staged, and the honey shown was not in quality or finish equal to that of former years; but, considering the adverse circumstances with which bee-keepers in the district have had to contend with, it must be said that on the whole the display was very creditable, several of the lots earning the high encomiums of the judges.

The exhibits of hives and appliances were, on the whole, very fair, but the judges were of opinion that much is wanting yet in this respect. They were of opinion that the different hives were of a much too complicated a character to be put into an amateur's hands, and that it would be a great advantage if, in the construction of hives, complicated arrangements should give way in favour of appliances of a more simple character. Again, in the majority of cases, the flight-boards attached to the hives were considered too small, and the preference was given in each class to the hive having the largest flight-board—eighteen inches being suggested as the proper size.

The judges were: Hives and appliances, Rev. J. Balfour Robertson, Leswalt, Stranraer, and Mr. Archibald Morris, Ballynafeigh, Belfast; and for bees and honey, Rev. J. Osborne Seager, Stevenage, Herts.

The following is the prize list:—

I.—For the best stock or specimen of any variety of bees with their queen: 1, Rev. James Hunt, common bees; 2, William Lonsdale, bees; 3, J. Gilliland, jun., bees. II.—For the best super of comb-honey (not being sectional): 1, I. J. M'Cabe, super; 2, William Lonsdale, super. III.—For the best glass super of honey: no entries. IV.—For the best twenty-four 1-lb. sections of comb-honey: no entries. V.—For the best twelve 1-lb. sections of comb-honey (confined to members of Association): 1, I. J. M'Cabe; 2, E. W. Lockhart; 3, George Porter. VI.—For the best twelve 1-lb. or six 2-lb. glass jars of uncongealed or liquid, extracted or run-honey: 1, E. W. Lockhart, twelve jars; 2, Alex. Turkington; twelve jars; 3, S. Kevan, twelve jars. VII.—For the best twelve 1-lb. or six 2-lb. glass jars of congealed, extracted, or run-honey: E. W. Lockhart, twelve jars. VIII.—For the best twelve 1-lb. or six 2-lb. glass jars of extracted or run-honey (confined to members of the Association): 1, E. W. Lockhart, twelve jars; 2, W. Morrow, twelve jars; 3, Edward Morgan, twelve jars. IX.—For the best ornamental design in comb-honey: William Lonsdale. X.—For the best exhibit of bees wax, being produce of exhibitor's own bees (confined to

members of the Association): 1, E. W. Lockhart; 2, William Lonsdale. XI.—For the best new (season 1888) invention calculated to advance the interest of bee-keeping: no merit. XII.—For the best bar-frame hive, with facilities for harvesting honey and wintering bees, complete with cover and stand: 1, Wm. Lonsdale; 2, Wm. Henry. XIII.—For the best and most complete bar-frame hive, with facilities for harvesting honey and wintering bees, complete with cover and stand, price not to exceed 10*s.* unpainted; 1, William Henry; 2, E. Morgan; 3, Abbott Brothers. XIV.—For the best and cheapest straw hive, with most simple and efficient adaptation for crate of sections, complete with floor and cover: 1, Wm. Lonsdale; 2, A. Cross Bryce & Co. XV.—For the best two crates of sections, capable of being tiered, complete with foundation, separators, &c., price not to exceed 3*s.* 6*d* each: 1, Abbott Brothers, economic section crate; 2, Abbott Brothers, divisible section crate; 3, William Morrow. XVI.—Special Class.—For the best six 2-lb. glass jars of extracted or run-honey, with honey labels affixed with names of apiary, label and appearance to be taken into consideration by the judges in making their award: 1, George Turner.

IRISH BEE-KEEPERS' ASSOCIATION.

On the evening of Tuesday, the 28th August, being the first day of the Royal Dublin Society's Horse Show, the Association held a Conversational Meeting in a room in Trinity College kindly lent them by Dr. Traill. Amongst those present were Rev. Canon Sadleir, Rev. Dr. Hoops, Dr. and Mrs. Knight, Mr. and Miss Daly, Mr. Duffin, Mr. Gillies, Mr. Barnes, Mr. Abbott, and Mr. Chenevix, the Hon. Sec. Tea was served about 7.30. Mr. Abbott contributed much to the enjoyment of the evening by kindly lending a microscope with slides illustrating the structure of the honey-bee, and a second microscope was obtained on hire from Mr. Mason, optician. About 9 p.m. the chair was taken by Rev. Canon Sadleir, and a discussion was opened by Mr. Gillies on the following topics:—(1.) Could improved modes of marketing honey be adopted? (2.) What is to become of the vast number of skeppists at present unable to improve their methods? (3.) Is it well established that foreign bees do better than natives, and has the crossing of the former with the latter improved the race? A long discussion of much interest and practical suggestiveness followed. The proceedings were of too conversational a nature to admit of a detailed report, but the following summary will give some idea of the most important remarks:—

(1.) As to marketing honey, Mr. Gillies believed a great improvement would be effected by putting a brand on the best honey. Mr. Abbott (who is agent for the sale of members' honey) remarked that honey is already practically classified, as he informs purchasers of the varieties in the quality of honey sent to the Association's Dublin dépôt. Mr. Gillies also raised the question whether it might not be—sometimes at any rate—advisable to send the honey to richer centres than Dublin, such as London or Manchester. During the discussions relating to the sale of honey, Canon Sadleir expressed in the warmest terms his sense of the obligation the Association is under to Mr. Abbott for his services in this department.

(2.) To enforce his view that the Association should give more consideration to the position of skeppists, Mr. Gillies referred to the Registrar General's returns as tending to show that skeppists are being squeezed out of existence by the advance of bee-keeping. Mr. Duffin also thought that from the same cause the price of skep honey was being depreciated, and that this gave the skeppists a moral claim to all the assistance the Association could render them towards adopting improved methods themselves. Mrs. Knight suggested that lectures in the bee-tent should be given, with a charge of only 1*d.* for admission, a charge of 6*d.* being too high for cottagers. Canon Sadleir said he found from his own experience that the existing books on bee-keeping were not sufficiently adapted to beginners; a more elementary treatise was required. Another thing wanted was to have instructors going round the country. He suggested that an advertisement might be inserted, offering to send an instructor to any district where sufficient money was promised to pay expenses. Mr. Chevenix raised a doubt as to whether it might not be possible to increase the production of honey too largely, causing such a further depreciation in its price as would make bee-keeping unremunerative, but hardly any sympathy was expressed with these fears by the others present.

(3.) As to foreign bees Mr. Gillies observed that he had not seen any well-authenticated records of their doing better than the natives, and with regard to the question of crossing them with natives, he remarked that hybrids are very bad-tempered. Mr. Abbott said he found hybrid bees the best.

LANCASHIRE AND CHESHIRE BEE-KEEPERS' ASSOCIATION.

The Rev. J. Lingen Seager, on the invitation of the Lancashire and Cheshire Bee-keepers' Association, visited Chester on the 31st August and 1st September, being the days the Cheshire County Agricultural Society were holding their annual show. The bee-tent had been in use the two previous days at Eccleston, near St. Helen's, and though sent off by passenger train did not arrive in time for any manipulations to be done on the first day of the show; this was the more to be regretted as the weather was everything that could be wished—what joy to thousands if we could have a continuous thirty days of such sunshine! There was a downpour of rain on the following day (Saturday), but, nothing daunted, the Rev. Mr. Seager gave three addresses, while Mr. F. H. Carr, the expert of the Association, took the frames out of a hive, captured the queen—which was shown to the audience, and, after the frame-hive was removed from the tent, the bees were driven from a skep. Though the weather was against the handling of bees the manipulations were successfully gone through, and the tent was filled with visitors who thoroughly appreciated the Rev. Mr. Seager's practical and instructive addresses.

Holding One's Breath an Exemption from Stings.—I heard years ago of the absurdity, that holding the breath would exempt one from stings. I thought at once that it was nonsense, but put it to the test. It was one of the most satisfactory experiments that I ever tried. I think the bee appreciated the joke, for I rarely got a more painful thrust. It was like Bro. D. A. Jones's ice-water. He told me the ice-water would prevent all pain from a bee-sting. I said, 'Produce the water.' I pinched a bee, got a sting, and at once thrust my hand *into* the cold water. I do not think I was hurt worse from a bee-sting that whole season.—Prof. Cook.

Marketing Honey.—The subject of honey and marketing is one which concerns nearly every bee-keeper, and very properly too, because in these, aside from pleasure, rests the just reward of study and labour, for it is fallacy to think that without study and labour in bee-keeping, as in all other pursuits, any great results can be accomplished. In marketing honey it should never be forgotten that a good article in an attractive form will always command the highest price, the best reputation, and a steady demand.—*Rural Canadian.*

Bees Swarming on a Cow's Back.—We are informed that a cow belonging to Mr. Craddock, near Winfall, came up one evening not long ago with a whole swarm of bees quietly settled on her back. His wife milked the cow while the bees were yet on her back. They remained four or five hours, and then sought other quarters.—*Record* (*America*).

Foreign.

BEE-KEEPING IN THE CAPE.

I enclose cuttings from the *Cape Argus* (weekly edition) of the 30th of March and 6th of May, which will give you a slight insight to some of the ideas held at the Cape, especially by one who signs himself 'Cape Bee Master.' The letters may amuse some of your readers if you think fit to publish them in the *Bee Journal*. However, I send them for what they are worth.—G. H. Hogge, *Cape Colony*.

'Sir,—I would wish, through the medium of your very valuable paper, to solicit some information *re* a very remarkable occurrence with bees. About twelve months ago I caught a young swarm of bees, and placed them, together with their queen, in a hive. About six months ago, on examining the hive, I discovered that the queen-bee was nowhere to be found in the hive, and that the swarm had not increased in number as young swarms generally do. Last month I again examined the hive, and, to my surprise, I found some comb sealed up, and some with young bees in it. Now, Mr. Editor, as queries, I would like to put the following question, which, perhaps, some more experienced bee-keeper than myself will kindly answer. Where do the young bees come from when the queen has not been found for more than six months? Is it not understood that the queen is the progenitor of the young swarm? Is it not understood that a swarm expires on the loss of their queen? How can it be accounted for that this swarm has subsisted and evidently procreated young bees without a queen at all?—I am, &c., Transkeian Bee-keeper, *Engcobo, Tembuland, March 8th*, 1888.'

'Sir,—Your correspondent, "Transkeian Bee-keeper," has omitted to state whether he searched the hive to find if there was a queen when he found the comb of young bees and sealed-up honey. Having had similar cases, I think the swarm he caught and hived had a virgin queen; and as the common practice here is to cut the queen's wings, he did so, and thereby prevented her from becoming a mother bee: after awhile she died. If a fertile queen's wings are cut, the very longest life she can live is seventeen months, as queen pairs with the workers in the hive within fifteen hours after she emerges from the cell, and afterwards outside the hive yearly, generally in the month of March, and commences the breeding season in April. The working bees will make comb, gather pollen, store honey, and remain for weeks or months without a queen, but decrease in numbers, until in their rambles in the fields they fall in with another swarm, and, enticing them to their hive, will joyfully unite and become one stock. Now for his queries—1st, No young bees can be produced without a queen; 2nd, The queen is the mother of all the bees; the swarm does not always die if the queen dies—that only happens when there is not an egg left in the cells, which is very seldom the case. Providence has so ordered it that if the queen is killed, the working bees can raise one or more others by taking and strengthening a worker's cell and increasing the size to a queen-cell that has an egg in it not hatched, and feeding it with royal food when hatched; its food looks like cream, and on the eleventh day it comes forth a charming young queen. Any number of artificial swarms may be raised from stocks of 80,000 or 100,000.—I am, &c., Cape Bee Master.'

'Sir,—I have read with interest two letters on bee-keeping which appeared in your columns last week. With regard to the second one, with all due deference to "Cape Bee Master," I beg to state that I differ from his remarks on one or two points, which I shall endeavour to explain. According to "Cape Bee Master's" showing, the young queen pairs with the workers in the hive within fifteen hours after she emerges from the cell. The supposed virgin queen in "Transkeian Bee-keeper's" swarm must have been fifteen hours old at least, and consequently have become fertilised in her original home by the workers, so that her wings being cut would not prevent her becoming a mother. Now it is a well-known fact that worker bees are only imperfect females, and the queen could not pair with them. The drones are the only males in the hive, and pairing must take place within thirty days of the queen's birth, outside the hive, and only once in her lifetime—not yearly—as she never leaves it again, except with a first swarm. Queens have been known to live five years, but are of no use at that age. The practice of cutting her wings is not to be encouraged, as a damaged queen is very apt to be superseded, though, if she issued with a swarm, she is easily caught, being unable to fly, and it is done for that purpose.

'Where a fertile worker exists in a hive, her eggs will hatch out, but produce only drones, and the colony dwindles and dies. She cannot be recognised from the other workers.

'My opinion regarding "Transkeian Bee-keeper's" queries is as follows:—There was a fertile queen when the swarm was captured. She lived for, say, six months, and died, leaving eggs and young brood hatching. The owner examined the hive when there were very few eggs left, one or more of which was being transformed into a queen, which duly hatched out, became fertilised, and hence the queen and young bees when next the hive was examined. A swarm must have a prolific queen if it is to live and multiply. A swarm will not necessarily die on the loss of its queen, though it dwindles away until another one can be raised. If this cannot be effected, I am of opinion that the queenless swarm would soon join another having a queen.

'Thanking you for the space granted for above,—I am, &c.—Alpha.'

'Sir,—A letter, signed "Cape Bee Master," in reply to our "Transkeian Bee-keeper," appears in your issue of this morning. "Cape Bee Master," whoever he may be, betrays such a rudimentary knowledge of the subject in hand, that I cannot allow some of his assertions to pass unchallenged. In the first place I read, "The queen pairs with the workers in the hive within fifteen hours after she emerges from the cell, and afterwards, outside the hive, yearly." Now, I would like "Cape Bee Master" to give me his authority for this ridiculous assertion. In the first place, I am under the impression that the queen-bee pairs with a drone—the male sex in a colony of bees—and not with worker bees, which are in themselves imperfect females, and under certain circumstances—which I need not state here—become capable of breeding; their progeny, however, invariably being drones. Secondly, impregnation never takes place in the hive, but always on the wing; and not fifteen hours after emerging from the cell, but from two days (according to Dzierzon) to two weeks afterwards. Impregnation once taking place, the queen-bee remains fertile for the rest of her days, and never again leaves the hive with the solitary exception of swarming. If "Cape Bee Master's" assertions can be substantiated, he will create a revolution in apiarian literature, and justly claim to be a modern pioneer in this department.

'However, I have not the slightest doubt that "Cape Bee Master" knows no more about bee-keeping than perhaps "Transkeian Bee-kepeer" himself, whom he endeavours to instruct.

'The remainder of your correspondent's information I will pass over, though brimful of errors; and, having regard for your valuable space, will conclude, at the same time recommending "Cape Bee Master" to master the subject before he again appears in print, and suggesting to "Transkeian Bee-keeper" to procure a reliable work, such as Neighbour's *Apiary*, and many others that might be obtained from our booksellers for a few shillings. He will there find ample explanation for any difficulty under which he might labour with reference to bees and bee-keeping.—I am, &c., Amateur Bee-keeper.'

'Sir,—When I answered your correspondent, "Transkeian Bee-keeper," I did not intend to raise a controversy about bees, as there are few persons here that take any interest in bees, but thousands that take great interest in honey. First, I must correct a mistake in my last, for "any number of artificial swarms" read "artificial queens." I once raised twenty-seven artificial queens in twelve days. See the account of it in the *South African Advertiser and Mail*, December 23rd, 1867. It is evident your correspondents have obtained their knowledge from writers on bees of other countries; mine I have got by

observations and experiments with the bees in Cape Town. I never saw a hive of bees before I left England, and therefore sign "Cape Bee Master." Your correspondent "Alpha" has read "Huber" and "Neighbour" on bees. Had Huber had the sight of his own eyes, he would never have stated many things he did. As to Neighbour's nonsense of the queen being a widow all her life, and not leaving the hive except with the first swarm, I have caught young queens outside the hive eight o'clock at night. The queen pairs inside and outside the hive. I have hived swarms and found she had not paired outside the hive, and have taken off the guard to allow her liberty, and in a few days after seen eggs in the cells. A natural queen will lay eggs the fourth day after she emerges from the cell. If she has duly paired inside the hive, she will lay eggs, but they will not hatch. I have counted as many as twenty-two in one cell. By request of Mr. Layard, of the Museum, I kept a queen three and a half years, allowing her liberty every March. Without it she gets smaller and smaller, and then dies. I kept the mother, daughter, and grandmother in one hive; she produced, as near as I could guess, 90,000 workers in the year—I only having kept a guard on all the year to prevent them forming drone combs. The size of cell and the food they receive make the difference in the bee. My answer to your correspondent, "Amateur," is my authority for stating the facts. I have my own eyes, ears, observations, and experiments, &c., for forty-five years. If he has no more knowledge than that obtained from books, and not from practice, he had better begin now, and, as a hint, begin with the black bee, not the brown, for they are daylight robbers and murderers. To state all my experiments with bees would fill columns and columns of your paper, which would be imposing on your good-nature. Farewell. —Yours, &c., CAPE BEE MASTER.'

'SIR,—My attention having been drawn to a letter in your valuable paper of the 23rd inst., by a "Transkeian Bee-keeper," submitting two queries in bee-keeping for solution. In England I had considerable experience in bee-keeping. I had different kinds of hives, some for experimental observation, others for profit. My observatory hives, containing only one comb, with glass on each side, so that not a single bee could escape observation. I experimented on them to ascertain what course they would adopt under different circumstances, and have put statements I had read in books respecting their capacity and wonderful instinct to a practical test; and, from my own observation, I will endeavour to answer the questions. There are different causes possible to account for what appears very singular. I should like to know if the wings of the queen were clipped when first placed in the hive with the rest of the bees—a practice which, I am told, is often resorted to in the colony, but a very bad one. I will suppose such to have been the case, and that, previous to leaving the parent stock, she had mated with a drone. In that case she might remain in the hive a considerable time and produce eggs; and as queens do sometimes, though rarely, fly out for an airing, if her wings had been clipped, she would, in attempting to fly, come to grief, and the bees, being deprived of their queen, would rear one or more young ones from the eggs or young larvæ to supply her place. That process might be going on when the first examination took place six months after being placed in the hive; or the queen may have died, as is sometimes the case. Such a contingency would cause a considerable delay in the process of propagation. Moreover, I have known bees to remain in a hive and work on for a time without a proper queen, all the workers being females, but not sexually developed. Any egg or young grub that would, under ordinary feeding, develop into a worker only when fed on the more stimulating food might mature into a queen. It sometimes happens that one or more of the larvæ, that have been reared and let loose by a young queen, might have partaken of the peculiar jelly supplied to infant queens, and become more fully developed than ordinary workers. Such have been known to lay eggs, but they invariably produce drones only. It is impossible for any one—not having an opportunity of examining the appearance of the combs and bees for himself—to tell, with any degree of certainty, what really did take place. I can only tell what would probably happen under certain contingencies. Perhaps the queen had left with a swarm just before the last examination, and the infant queen, not having emerged from her chrysalis, would not be visible.

'I am afraid I have already trespassed too far on your valuable space, or much more might be said on this—to me —very interesting subject.—I am, &c., J. BOOTHMAN, *Ladismith, March 29th*, 1888.'

A CUBAN APIARY.

A few days ago, Senor Pedro Perez, who is as pleasant and friendly a neighbour as we ever had anywhere, offered to take me to see a native Cuban apiary; and I will describe the little I saw, so that your readers will get some idea how what is known to commerce as 'Cuban honey' is obtained.

The apiary contained eighty colonies, which is a very small one for Cuba. The hives varied from six to twelve inches square, inside measure, the large majority being eight and nine and three and a half feet long, made by nailing four boards of the proper width and length together, and a short piece of board over one end. So far they were very similar, except being longer, to the skeps, or gums, so many of which are still in use in our own southern States. They were not stood on end, as our people use them, but laid down on the side, the same as are the earthen hives in use in Cyprus and Syria. One entire end of the hives was left open, and this is the only peculiar feature there is which is different from methods in use in other countries, and which have already been described in the journals. The hives were laid on poles, so they were about two feet above the ground, the poles being supported on crotches, old boxes, barrels, or anything they could get. They were scattered around among large banana plants to protect from the sun.

At least once a-year during the honey-flow in the winter, and sometimes also in August, everything in the hives, except the bees and the small amount of comb that may contain the brood, is taken away and mashed and strained by the old-fashioned processes. The result is strained honey containing all the different grades and flavours that may have been gathered during the year.

It was really interesting to walk around among the hives, look directly into their open ends, and see the bees clustered so quietly on their combs; but I could not help thinking what an amount of fun there must be should they once get thoroughly to robbing. And, by the way, I find that bees do not rob so persistently here in the South as at the North; this being true, so far as I have observed, both in Florida and here in Cuba.

I am told that there are many large apiaries here in Cuba, of at least a thousand colonies each, all run on the same plan as is this small one I visited. I am also told that there are only three moveable-comb apiaries on the island. The first was started by the Casanova Brothers some five years ago, this one about two years ago, and one now under way by Mr. A. J. King, near the centre of the island.

So far I am quite favourably impressed with the honey resources of Cuba; and after I have been here long enough to know from personal knowledge what they really are, I will try to describe them.—O. O. POPPLETON (*Gleanings.*)

CANADA.

The season to date, August 2nd, has been a remarkably poor one. As before stated, clover gave us almost nothing, linden very little in most districts; and about the close of linden we had just the weather required to get a good flow from Canadian thistle, frequent showers and rather warm between. What has been secured throughout Canada from this latter source I cannot yet say definitely, but I learn from quite a number up to date it has been but little. My yield from forty-nine colonies, spring count, has been a little over 1000 lbs. The sale

of queens has but slightly interfered with the yield. The average yield throughout the Dominion will be much less than this. On the other hand, I know of two or three who have secured almost 30 lbs. per colony. Such a season must be very discouraging, and especially when following two poor seasons, and it must surely gladden the hearts and raise the hopes of those amongst us who were growling about glutted markets and over-production, and the low prices to follow, or at least give them a fresh subject for dissatisfaction. The increase in colonies has generally been very small, and will doubtless not reach eight per cent. When we remember that bees did not winter very successfully, and, still more, many were lost by robbing and spring dwindling, and another winter and spring is to come before more increase will appear, we may rest assured that there will be only five colonies to commence the season of 1889 where there were ten in August 1887. This is a dark picture, but plain facts, and hence of value and interest. The question has, however, its bright side. Many will doubtless be discouraged. There are so many who do not care to embark in anything which does not promise, or which, with their sanguine dispositions, does not appear to promise, marvellous results, such must, during the last three years, have found out that bee-keeping has its dark side as well as other pursuits, and the bee-keeper who remains will doubtless eventually profit by these years, and secure a better market for his honey, and have a wider range for his bees to gather honey.

I have some eight hundred of the Chapman honey plant (*Echinops sphærocephalus*) in bloom or about to do so. Although not at all favourably impressed with artificial bee-pasture, except it yields other returns, or is done by scattering seeds upon waste lands, such as is frequently found in smaller or larger patches in Canada, yet I am favourably impressed with this plant. My bees worked upon it all day, and even at a time when some colonies were storing 4½ lbs. of surplus a-day. This is a good test. If no honey were coming in from other sources, to see bees upon this plant from early morn to late at night would be no proof, but as it is it must be proof that the honey is secreted very rapidly by the plant.

I have had several young men from Europe in the apiary during the summer, the last one from England. With so much to attend to, one cannot do justice to a student, but have been able to secure positions with our best bee-keepers for all but the last. He was too late. The season was just opening, and at the time all arrangements had been made for a large honey-flow, and, much to my regret, the young man had to leave for Uncle Sam's domains. Any one coming out with the object of learning bee-keeping should secure a position by the first, or at least middle, of April.—R. H. Holtermann, *Brantford, Canada.*

Suggestions Concerning the Systematic Use of Honey.—Sweeten your tea and coffee with extracted honey. It is a true brain and nerve food and tonic. It gives refreshment and nutriment to the mental and physical exhaustion, and tired and confused brain; gives new life to the weak and debilitated, relieves nervousness from excess of any causes; improves the appetite, tones the system, and has proven to be of great value in many diseases, producing a contraction of the muscles of the digestive organs, and as an aid to digestion it is wonderful in building up lost power. It would be difficult to conceive of anything more nourishing and strengthening, creamy and delicious. For nursing mothers it is highly recommended. For lung and throat diseases nothing can be better. It is a cheap remedy for the consumptive, and in fact it should take the place of sugar in many things.—J. W. Tefft (*American Bee Journal*).

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts* (see *2nd page of Advertisements*).

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

THE COMBINATION PRINCIPLE.

[1780.] Notwithstanding all that has been written and said in favour of the above principle, there are some who affect to believe that it is losing ground in the estimation of apiarists, by whom I mean those of the large army of bee-keepers, not simply beginners, who have had sufficient experience to form an opinion unbiassed by any one who has 'an axe to grind,' a friend to serve, or an opponent to stab. As the originator of the combination principle, I beg leave to thank you for the honour you have done me in your recognition of the principles involved by inviting opinions on the relative value of frames parallel with, and at right angles to hive entrances, and to express my deep satisfaction with the consensus of opinion set forth thereon. Mr. Raitt said some time ago that the current had set in against the combination principle, and Mr. Hooker is evidently inclined to beg the question in that direction. I agree with Mr. Raitt (p. 148 of the *Record*) that, 'under the fostering and stimulating prize schedules of the leading bee-keeping Associations, the tiering system is being pushed to the front,' but I claim for the combination system that it requires no *pushing*, but is making its own way, and will presently be *the* system *par excellence*, despite all that opponents can say against it. 'Tiering-up' is only another name for storifying, but there is sufficient of novelty in the name to ensure its adoption by a large section of the public, as there was in Heddon's system of hive inversion, about which so many bee-keepers lost their heads for a time, but which I rightly denounced from the first as a delusion and a Yankee scare. Storifying (or tiering) is as old as the hills, yet Mr. Raitt writes of it as being *pushed* to the front as if it were a new discovery, and was practically untried. Mr. Hooker (p. 421, *B.B.J.*) objects to combination hives because they 'cannot be raised at the back to let out the moisture,' forgetting that no moisture has any right to form within a hive, and that, therefore, to provide means for its exit argues a misunderstanding of hive-architecture and of the necessities of bee-comfort. Mr. Hooker says, 'The majority of most advanced bee-keepers, both here and in America, use hives with frames at right angles with the entrance;' but out of eleven prominent bee-keepers replying to query No. 22 on the subject, only a very small minority favour the right-angled system.

In conclusion, I would say that I have no trade interest in the Combination hive, or any other; and my sole reason for advocating its principles is that I am convinced of their superiority over all others, and, as of old, am most anxious to recommend only what is best to bee-keepers generally.—C. N. Abbott, *Southall, August 21st.*

NOTES ON BEE HIVES.

Fertile Queen Introduction.

[1781.] *Re* 'Useful Hints,' on pp. 420–1 of the *British Bee Journal* of the issue of the 30th of August, 1888, I beg to note that this identical method of queen intro-

duction is first given in Mr. White's work on bees, 1774, and that neither the Rev. George Raynor nor Mr. Frank Cheshire can, in consequence, lay any claim to being its discoverer, inventor, or improver.

As I am staying a few days at Llandudno, I am many miles from my library, consequently, I cannot turn to Mr. F. Cheshire's work on bees. I shall, therefore, be pleased if you will kindly insert the above lest any one should think that this method of queen introduction is modern, as the remarks under 'Useful Hints' would lead any one to suppose without a reference to the book indicated.

I believe also this method of queen introduction is commonly ascribed to the Rev. George Raynor. Regarding the statement the Rev. George Raynor made some time ago, when queen introduction was being discussed in the columns of the *British Bee Journal*, that he would leave it to the readers of this *Journal* whether he was capable of telling whether a hive contained a queen, I beg to point out that it is impossible to say so in every instance, as some queens cannot be distinguished in outside size and appearance from ordinary worker bees.

I am pleased to see from the reports in the *Canadian Bee Journal* that the Hallamshire Law of queen introduction is gaining friends and becoming very popular.

Readers of the *British Bee Journal* will find a most valuable, able, and eminently scientific article on 'Virgin Queen Introduction' in the *Journal of Horticulture*, by a Hallamshire bee-keeper, in one of the issues of the early part of this year.—T. Bonner-Chambers, *Tref Eglwys, Caersws, Montgomeryshire, Aug. 30th.*

[We have yet to see a queen that 'cannot be distinguished in outside size and appearance from ordinary worker bees.' The so-called 'Hallamshire law' is no 'law,' as some of our most able bee-masters have proven; and while it is true that one or two Canadian bee-keepers have succeeded in introducing queens by this system, we have seen no reports that would warrant us in saying it was 'becoming very popular' in Canada. —Ed.]

SOPHISTICATION.

THE HISTORY AND RESULTS OF THE ADULTERATION OF HONEY.

[1782.] The first intimation of adulterated honey came to me about twenty years ago, when, after sending six or seven barrels of extracted honey to Mr. Perrine, a dealer of Chicago, at seventeen cents per pound, I saw at a grocery in Hamilton, one or two dozen small glasses containing liquid honey, sent by the same firm, at sixteen cents per pound. This adulterating business was a paying one, the glucose added being sold at sixteen cents, with a profit of about eleven cents per pound.

After having made this discovery, I hastened to write in the bee-papers, and to put on our labels, that the best proof of purity for honey was its granulating. Of course this statement was fought by the adulterators, who affirm that it was just the reverse. But now this truth is accepted by all the consumers who buy our honey; so it would be a hard task for the adulterators to sell their stuff around us. Had all the bee-keepers insisted on selling their honey granulated, as we did, the adulteration would be altogether a thing of the past.

Nine or ten years later, while offering our extracted honey to some dealers in St. Louis, I was shown comb honey in small glass-jars, filled with liquid glucose, sold by Messrs. Thurber & Co., of New York, cheaper than I asked for my extracted. I bought one of these bottles and exhibited it at a meeting of bee-keepers held at Burlington. On my request, a committee, composed of Messrs. Thomas G. Newman, Rev. O. Clute, and myself, was appointed, with the mission of sending to Congress a petition against adulteration.

I took the affair in hand, and sent to Washington the petition signed by more than 30,000 names. But all my trouble was for nothing, for the petition, although well backed, was sent to a committee which never reported on it; our 'honourables' having no time to spare for the health and the interest of the people.

It was at about the same time that Mr. A. I. Root invented his comb foundation machine. The announcement of this new step in bee-culture gave to many people the idea that, to produce comb, we could dispense altogether with bees; especially when it was hinted that paraffine could be used instead of wax. Yet paraffine was soon discarded by those who tried it, not only because the bees objected to it, but on account of its lower melting point, for its smallest adjunction increasing the ductility of the wax, the comb dropped in a mess to the bottom of the hives.

Yet those who consider nearly all men as rascals continued to speak about this business of using paraffine, and soon got the idea that bee-keepers had found the means of making comb honey entirely free from bee-mediation. Such a statement was so absurd that it would have collapsed of itself had not a professor of chemistry, Mr. H. W. Wiley, taken it under his own responsibility, by writing the following sentence in the *Popular Science Monthly* for June, 1881:—

'In commercial honey, which is entirely free from bee-mediation, the comb is made of paraffine, and filled with pure glucose by appropriate machinery.'

These fallacious ideas spread like fire in the whole country, not only on account of the large number of comb-foundation machines bought by bee-keepers, but especially because the statement was backed by a professor of sciences. The *British Bee Journal* for March 8, 1888, speaking of the Wiley lie, says: 'Naturally, subjects coming from a *professor* would be considered facts;' and it is for this reason that a man who fills the high office of professorship ought to be careful not to publish scientific jokes, like clowns in front of the tents of the Barnums; especially when their jokes accuse of fraud a large class of citizens. Such a slander deprives its author not only of the honour attached to a good name, but of all the confidence indispensable to pupils towards their professor; inspiring doubts as to the reliability of his teachings and experiments.

But this joke did not suffice, for Mr. Wiley, angry at seeing bee-keepers 'handling him without gloves,' he published a report to prove that nearly all the honey put upon the market was adulterated. Of course this *pretended analysis* continued to injure the trade of bee-keepers by increasing the suspicion of buyers; the sale of honey became more difficult, and its price lowered.

But a large number of bee-keepers *were not duped by the chemists of the Government*, for he had gone too far, accusing of adulteration several men who were above suspicion.

To my mind either Mr. Wiley is a poor chemist, or he continued his slander. He says that he desires to fight adulteration in the interests of bee-keepers. Then he acted as the bear of the fable, that used a big stone and broke the head of his friend to kill a fly resting on his nose while he was sleeping. The bee-business would have been more prosperous had not Mr. Wiley busied himself about it.

I think that we were among the ones who could best see to what extent the Wiley slander took root in the minds of the people at large, for after showing to visitors the shops in which comb foundation is manufactured, we have often been asked for the privilege of seeing how we put glucose in the combs!

As soon as Mr. Wiley saw his lie reproduced by other papers, his strict duty was to write to the *Popular Science Monthly*, and to the other papers, that he was regretful of the consequences of his low joke. But he seems to be void of the sense of right to make such an

apology. His haughty language shows that he thinks himself far above all of us bee-keepers, since he finds nothing but insults in answer to the reprobation of those whom he has slandered. I doubt whether he could find a gentleman in the whole United States who would dare to excuse him.

It is perhaps necessary to add for the instruction of the professor that when extracted honey is worth from four to eight cents, adulteration is not possible, for it does not pay. We find the proof of it in the closing out of most of the manufacturers of glucose, and in the failing of Hoge, who had gone to England, where his adulterating business was so ruinous that he left about *two mills to the dollar* to be divided among his creditors!

As to the adulteration of comb honey, not only its manufacture is impossible, but bees cannot be induced to put glucose into the combs if there is a drop of honey in the fields, and the rearing of brood when bees are fed during a scarcity, employs too much food to leave a profit. Therefore we bee-keepers beg the *illustrious* (?) chemist to let our business alone, for he has already injured it too much.—Charles Dadant, *Hamilton, Ills.* (*American Bee Journal*).

NOTES AND QUERIES.

[1783] The purchasing and making of hives will soon again engage our thoughts, such of us, anyhow, who have to employ spare time during the winter months. And a few hints from the more experienced bee-keepers will be very opportune just now, and gratefully turned to account.

Our aim ought to be to provide for the bees to store the nectar with the least possible labour; hence the necessity for a *best hive* for all purposes.

There will always be variety in make, as we can modify to almost any extent, and let this be so. We can have round hives and square ones; long and tall; octagonal and observatory; fancy and plain; and of all colours. But for those whose aim and need is profit, let it be known and established that there is a *best* hive, easier of manipulation if possible, and less laborious for the bees than the storified hive. How long does it take for a bee to reach the fourth storey, supposing the frames in the first and second storeys are 1¼ inch apart?

When the heavy-laden little toilers arrive, panting, at the hive entrance, the course is not clear for them to mount to the top storey, but the passages are crowded by thousands of their sisters, hundreds of them babies almost, just from their cradles. Much time, therefore, and labour are spent in reaching their little store-rooms.

Place beside this a long hive capable of taking forty frames; which will give the best results?

What are the decided advantages of a tall hive over a long one? Temperature is supposed to be one, I believe, but even *this* summer my bees found it too hot for them in a Cowan hive, with two storeys and two crates of sections on. They clustered in their thousands between the hive and the outer case, and remained there till the fall in the temperature made it possible for them to re-enter. This occurred whenever it was warm enough, and none of the bees clustering seemed to work.

In this hive, as in the others, I tried to prevent swarming, but this Cowan hive alone swarmed, and the bees measured more than a peck. This was on July 15th, and there were not enough bees in the hive at the spring examination to cover three frames. Having gone through the frames and cut out six or seven queen-cells, I spread a white carpet for the return of her majesty and attendants.

Now, would not manipulation after swarming be much more readily and easily done if the hive were horizontal or long, instead of being tiered up? Would the temperature ever be too high for comfort and work in a long hive, as it is in hot weather, when the flowers yield nectar, in a storified hive? Would it not be an advantage to the bees and us if all the storing could be done on the ground-floor?

Perhaps it would be found necessary in a long hive always to use a queen-excluder division-board, and to confine her to those frames placed 1¼ inch apart.

Many bee-keepers have tried both methods, and this question of the best hive for all purposes might form a 'selected query.'

As I have not finished extracting, nor taken off all the section cases, I will defer my report till I can give correct weights of honey, &c.—F. Goodrich, *Methwold, Norfolk.*

[To reply fully to your remarks would entail going over the whole ground of long *v.* storifying hives, which never will be settled to the satisfaction of all bee-masters as a reference to 'Selected Query' No. 21, on page 407, present vol. of *Journal*, will show you. See also article in present No. from the pen of Mr. Abbott. Swarming depends more on the bees than on the hive; with us this summer our bees in 'combination' hives have insisted on swarming, while those in 'storifying' have been content not to swarm, but to gather what they could, which has been but little. Your bees that remained at home clustered between the hive and the outer case were mostly young bees that had not flown and taken their place as foragers, and had no 'nursing' to do. You ought not to have given them the opportunity of getting between the hive and outer case. Choose a good-pattern hive to work by and you will not be very far wrong. We have no doubt but that a storifying hive of forty frames would give far better results than a long hive containing the same number. We shall be pleased to have your report.—Ed.]

HOOKER'S WINTER MANAGEMENT.

[1784.] May I venture to ask Mr. Hooker to be good enough to supplement his remarks on winter management in his *Guide to Successful Bee-keeping*, by kindly stating what his 'quilts' are composed of, whether of porous or impervious material, and, if composite, which material is laid next the top of the frames? I observe that in the *Guide* a dry hive and plenty of food are considered essential; but in the *Bee Journal* of last week, in reply to a query, Mr. Hooker insists on the back of the hive being raised that the water may run out of it. I see also that the hive entrance is to be kept open six inches wide all the winter, yet that it will be necessary to clear such entrance from dead bees from time to time to prevent it becoming choked and the bees dying from want of ventilation and excitement. These apparent incongruities are doubtless easily explainable, but at present I feel puzzled, because I cannot see how water can run out of a dry hive, nor how, under a proper system of management the choking of a hive entrance six inches wide, with dead bees, can be possible.—A. B., *Hounslow, Sept. 1st.*

THE FOREIGN BEES AND THEIR IMPORTATION.

[1785.] Since the first importation of Italian queens into Austria, England, and America, bee-keepers have shown much energy in their search for something still better. Long voyages have been taken to various parts of Europe, Asia, and Africa, and the forests of Java and Ceylon, the home of the *Apis dorsata*, have been visited in search of this famous race. A few years after the importation of Italians, it was learned in Europe that the bees of the island of Cyprus were a superior yellow race, and they were soon procured by European bee-keepers who were loud in their praises. Several Americans procured some of this stock from these bee-keepers, and in 1880, when there was such an interest in them, and when

news came of the good qualities of the Syrians, D. A. Jones of Canada started out in search of the new varieties, and returned with one hundred colonies of Cyprian and Syrian bees.

Others have visited Cyprus, Syria, and Egypt, for queens, and for a few years an American (Frank Benton) has made this his business, and now has queen-rearing apiaries in Syria, Cyprus, and Carniola, from which he supplies queens to bee-keepers in all parts of the world. They are packed to take long voyages in safety at the proper season.

We are now able, for a moderate sum, not only to obtain queens from Italy, but Cyprians from the island of Cyprus in the Mediterranean, Syrians from Northern Syria, Palestines from the Holy Land, Egyptians from Egypt, and Carniolans from the mountains of Carniola, a small district in south-western Austria. Each race or variety has certain qualities not found in the others, and from this list the modern bee-keeper may select his breeding stock, and combine whatever qualities he may require in his location, or for any special branch of the pursuit he may desire to follow.

For instance, one who runs his colonies entirely for extracted honey, to do the best needs different stock from one who makes a speciality of choice comb honey only; while one who makes a business of rearing queens for sale, finds certain varieties far superior for this work. Others who do not work for honey but simply for increase, may do best with still another strain: and again, the one who combines these branches wants the best all-purpose bee.

Certain varieties do the best in the South; others are most desirable in the North. In some locations, very early and heavy honey-flows are the main reliance, in others, the fall crop furnishes the only surplus; while in another place a moderate flow extends through the whole season. Therefore, each locality must be studied, not only to learn the special management required, but the race or strain of bees most adapted to it. My own bees, in four different locations, require different management in each apiary. A few miles may make a great difference. When there is a failure of the crop in one apiary, another differently situated may have a full yield.—Samuel Cushman (*American Agriculturist*).

STANDARD FRAMES.—HONEY YET.

[1786.] I think it has been overlooked, that the British standard frame is 8½ inches *outside* measurement, ⅜ inch of this is taken up by the top-bar; therefore, if the hive side is only 8¼ inches (the height given in *Modern Bee-keeping*), there is a space of ⅜ inch between frames and floorboard, the frame only hanging down 8⅛ inch. This morning, armed with confidence from the fact mentioned in the *B. B. J.*, that bees cannot sting a person holding his breath, I went for the first time without gloves, and was not stung; but I did not feel inclined to nip a bee to try. I looked through one hive twice to find a Carniolan queen from Simmins', inserted on Tuesday night, but could not, though I saw a few grubs looking only two days old. To this hive I gave a feeder of syrup over perforated zinc, placing it by means of a piece of tin pulled away when the feeder is in place. This made a little mess, so I thought at the next hive to try without the tin shovel; placing the perforated zinc over feeder, I turned it all over, when, lo! before it was in position, the whole of the contents, with the exception of a little in the neck, had emptied themselves into the hive. 'There, I've done it,' I thought. 'How am I to prevent the others from robbing? then I shan't be able to extract their honey.' As I closed the hive I saw the syrup running out of the entrance, but bees from other hives seemed to take no notice. Then to Nos. 3 and 4, when, lo and behold! after these cold, wet, and sunless days, I discovered they had both begun to stow honey in a box of half frames above the brood-nest. This in spite of my not having fed an ounce of syrup during the honey season—nay, this whole year, Mr. Editor. Nevertheless I am much obliged for your explanation of feeding during honey-harvest, but it would never do, as reputation would be gone at once did the skeppists discover that by the new system they feed their bees in midsummer. This discovered, I put on twelve sections and began to repent me that I had commenced feeding the others just too soon. You will hear if I get the sections filled.—F. G. Buzz, *near Hull*.

RAPIDITY OF BEES IN GATHERING HONEY.

[1787.] In your issue of August 23rd (letter 1766) 'East Glamorgan,' *alias* 'Welsh Novice,' endeavoured to cast doubts upon the statement of Mr. Sims of Navigation respecting the amount of honey gathered by one of his hives. Neither 'East Glamorgan' nor Mr. Sims is known personally to me, but I would point out that Mr. Sims is a very well-known and reliable keeper of minor live stock, and as such is more likely to be correct than 'E. G.,' who, by not giving his real name to his fellow bee-keepers, prevents them from forming a proper value of his writings.

As a proof that what Mr. Sims states is possible, I have written you the following: A large bee-keeper in this district, during a short but excellent honey-flow some years ago, obtained 40 lbs. from one hive in rather less than three days. Now 'E. G.' admits Mr. Sims' bees had six days of fine weather; and if the blackberry was in flower, I see no reason to question that a strong hive in first-class order, having very little young brood, might gather 58 lbs. in six days. As an instance of how short a distance makes a difference, I may mention that at the end of July, when my hives had not a pound of honey per hive, I removed a dozen very fair sections from a hive kept by my brother within four miles of my apiary, and a dozen frames were half filled in addition with sealed honey. From what I hear I expect we shall all find Mr. Sims a powerful competitor when he meets us at the honey shows.—Edward J. Gibbins, *Neath, Glamorgan, August 23rd*.

VENTILATION.

While Such is Necessary, it Must Not be Much.

[1788.] A great deal has been said about bees wintering without upward ventilation, and quite a number of bee-keepers claim that they winter better without any upward ventilation, saying: Bees in their natural state—in the trees of the forest—have no ventilation and winter well, and seem to do much better than those having the best of ventilation. We have found many wild swarms in the last thirty years in many kinds of trees, and in nearly every instance we found, either above or on the sides of the swarm, rotten wood which the perspiration from the bees could pass into, acting the same as upward ventilation. Some parties claim that they winter bees safely without upward ventilation, and that it is the proper way. If they will invert their hives and pour water into them, it will run out, therefore they are not air-tight, for where water will run through air will escape.

It is true, if bees are kept in a perfectly dry place and at a temperature of from 45° to 50°, they require much less ventilation than they would if kept in a damp, cold place. If bees are kept where it is continually freezing, and there is no place in the hive for the escapement of the perspiration that passes from the bees, it will commence to freeze on the outside of the hive; and if it continues cold you will find your bees dead, and ice formed all around the cluster of bees. Had there been

a small opening at the top, or near the top of the hive, for the air to escape, nothing of the kind would have happened.

It only needs a very little upward ventilation for bees; a good many bee-keepers give altogether too much. They need all the heat in the winter and spring months that can be obtained. Give only what will be necessary to let the perspiration out, so that the hive will not become damp on the inside. It is a good plan to leave the bottom-board off, or raise it up on blocks one inch, when wintering, especially in cellars; as the foul air always settles, and if the hive is raised it gives a chance for it to escape; and if there is any dampness in the winter depository it will prevent the combs from moulding.

The heat and circulation of the cluster of bees render the combs dry for some distance around the cluster, but there is not enough of this circulation of air, nor force to drive it to all parts of the brood chamber, and a part (often a very large part) of the comb that is damp with moisture extends up at the sides of the cluster to the top bees. This moisture gets into the honey and causes it to sour; and as the foul air is impure, gas rises on top of the brood-chamber, making the bees uneasy and they begin to move about, use the sour honey (which causes the diarrhœa), and the destruction of the colony ensues. We are safe in saying that a colony of bees never was known to have the diarrhœa when the honey and combs were kept perfectly dry.

Those that winter their bees without proper ventilation are often heard to complain that their bees got restless and uneasy from being too warm. My experience has proven that it is not the warmth, but the fumes of the sour honey arising below and accumulating in the upper portions of the brood-chamber that makes them uneasy, and the removal of the tight cover on top of the hive at such a time will convince any person that proper ventilation is necessary to the health of the colony.—Wm. Urie, *Minneapolis, Minn.* (*Farm Stock and Home.*)

BEES IN SKEP BUILDING COMBS PARALELL TO ENTRANCE.

[1789.] It is a well-known fact that bees hived in an ordinary skep without foundation being inserted, will build comb at right angles to the 'key-hole,' but I have come across an exception to this rule. I made and sold a skep and crate to a 'skeppist,' and he put a swarm in it in the beginning of June, giving the bees liberty to go up into the sections in five days (he having discontinued feeding after that time), and on making an examination some time afterwards, I found the combs in skep were built parallel to the entrance.

It may be of interest to readers of the *B.B.J.* to know how I made the hive and crate. It was thus: I cut the top out of an ordinary skep, and inserted a circular piece of ½-in. board 10 in. in diameter, and bored five holes in centre of it, each hole being ⅝ in. in diameter, then nailed strips of wood ⅜ in. thick round the holes, forming a square 6 × 6 in. to give bee-space between skep and crate when placed on, the crate having a hole in bottom 4 in. in diameter, covered with excluder zinc. The entrance I cut in floor-board 3 in. wide, with tin slides to contract it when necessary. I gave the skep and crate three good coats of blue paint (the roof white, of course), and there is a strong lot of bees in it with a touch of foreign blood in them, and how they got it is a mystery, as foreign bees are unknown here, in Lingfield, Surrey.—Idiot.

BIRDS AND BEES.

[1790.] I am surprised that any bee-keepers should have doubted that martins as well as swallows and sparrows are most destructive to bees. From my own observation I should say there is not a pin to choose between them, though sparrows are far the boldest. The other day I saw an old cock sparrow catch five bees on the wing in two minutes; he sat on the top of the hive and pounced at them as they came home, but I have never seen them eat *drones*. When the ground was covered with the dead and dying the sparrows carefully picked out live workers, while the swallows and martins (chiefly the former) scud after the bees as they come home before a shower, and catch hundreds on the wing, and when a swarm has turned out they will fly backwards and forwards through the cloud of bees. I have seen this times out of number.—W. E. Burkitt, *Buttermere Rectory, Aug.* 31, 1888.

P.S.—I have not seen a hive with 2 lbs. of honey in this season, and some cottagers have lost *all* their swarms from starvation.

SHALLOW FRAMES.

[1791.] I was very pleased to see your 'Selected Query' as to the relative merits of shallow and standard frames for extracting. The more so that while using the standard frames exclusively myself, I was wondering whether the shallow would not be an improvement. I noticed the foremost reasons, to my thinking, in favour of the shallow were not mentioned. The first is, that in adopting the tiering system with standard frames, and when putting an empty chamber under a nearly filled one, the weight, sometimes 60 lbs., is more than I can well lift, and I have to adopt other methods to attain the same results, so the idea of using sets of shallow frames at about half the weight is certainly attractive. Next, I should think thinner foundation could be used with safety in shallow frames; and, lastly, would they not be less liable to be bred in? I mean that the frames being shallow, there is the greater chance of their being filled with either brood or honey than the standard size, which so often are half filled with both. Mr. Abbott has so much experience, and expresses his opinion in such a decided manner, that I hardly like to differ from him, but I most certainly prefer the ten-frame storifying hive to any long combination hive, and am discarding the latter kind in my apiary.

The question as to whether frames parallel or at right angles to the entrance are the better, seems to be quite a matter of taste, but to obtain the same result the hives want a slightly different treatment. Thus, all other things being equal, the stocks on the parallel system build up more rapidly in spring, owing to the extra warmth, but seem to me to be more liable to cluster outside during summer. But if we give the right-anglers a smaller entrance, and perhaps a little more covering, one is quite as good as the other for spring use, and the extra ventilation of the right-angle system an advantage in summer. At least such is the experience of—Honeysuckle.

STINGING.

A DREAM ABOUT 'HOLDING THE BREATH' TO PREVENT STINGS.

[1792.] I had a dream. You know it has been asserted as a scientific fact that a bee-sting cannot penetrate a man's cuticle while he holds his breath. I have a profound respect for science. When science says a thing is so it's got to be so. Science *used* to say the world was flat, and that the sun made its daily circuit around it. Of course it *was* flat then. Even Galileo openly recanted the spherical heresy. But now the world is round because science says so. When science says 'thumbs up,' thumbs must go up. People never suspect science of joking. When it said several years ago that '*In commercial honey, which is entirely free from bee-mediation*, the comb is made of paraffine and filled with pure glucose by appropriate machinery,' they believed it, and all the

bee-keepers in Christendom have failed to convince them that it is not a fact. But to my dream.

My mind had been exercised over that scientific discovery, or the revelation of it, rather. I wanted to test it. I had no doubt it was scientifically true, but you know the spirit of inquiry that pervades the mind of young America. For a man to be an agnostic in religious matters is considered smart in some circles, but to be a know-nothing in science is to lose caste.

This is a practical age, too, and the Yankee wants to demonstrate every theory he hears of. The only reason he does not is because life is too short to devote to scientific investigation and money-making too.

It was a hot day at the close of the basswood harvest. But little honey was coming in. Swarming was apparently over. Bees were cross. I had lain down in the hammock for a short rest after dinner. I could hear the sweet hum from forty colonies as the happy young bees sported in front of their hives. I lay there enjoying the music when I saw an after-swarm rushing with new-born zeal from one of my hybrid colonies. The frisky young queen soared high. After an unusually long frolic in the air they alighted in a jack oak-tree fully twenty-five feet from the ground.

As luck would have it, the swarming-pole was broken, and the boys had gone to the hayfield. The great twenty-foot ladder was brought into requisition. As I could reach about eight feet myself, it looked easy enough to secure them without any assistance. I leaned it against a dead limb, and it did not lack more than five feet of reaching to where the bees hung. With saw in one hand I ascended. Reaching next to the top round I could reach the limb on which the bees were clustered. I proceeded to hold the limb with one hand and to saw it off with the other. Just as it was severed, the added weight of the limb and bees with my own, broke the dead limb. The ladder dropped back two or three feet with a sudden jerk, shaking about half the bees off on my head, neck, and hands.

Didn't I have a veil on? Not much. I am no greenhorn in this business. Besides, I was determined to demonstrate a great truth in science. I had the opportunity. They were not amiable. They were bent on mischief. With a wonderful unanimity of purpose, and surprising concert of action, they unsheathed their swords and proceeded to business. Of course I held my breath. I had been holding it for the major part of a minute in anticipation of just such a contingency. I filled my skin so full of resistance there wasn't any room for even the point of a javelin.

About a thousand bees, more or less, were humping themselves to get in the first 'lick' at me. It sounded like frying fresh fish in salted butter. I held the fort, *i.e.*, I held my breath. I thought they would get tired of resisting the inevitable laws of science, but they 'held the fort' too.

In my zeal to demonstrate a scientific truth, I forgot to descend the ladder until I was as red in the face as a boiled lobster. I then, for the first time, realised the fact that I could not hold my breath more than several minutes, even to accommodate science. I must have some oxygen anyhow, or my lungs would collapse like a pancake with too little soda in. I was not organized like a fish, that is sure (unless it was a whale), for I wanted to *blow*.

I was all the time standing on next to the top round of the ladder, holding on nervously by one hand to a small limb, and a severed limb and a part of the bees in the other. The rest were clutching my naked flesh with their claws, their backs elevated like a cat on the back fence at a feline concert. No matter, breathe I must.

Just then the faithful dog appeared on the scene, under the tree, as interested as if I was capturing a 'coon for his especial delectation. Although I was the *centre* of attraction, enough scouts paid respects to him to give him a warm reception. After rolling over several times, he started for the house in haste. You see he had not been educated to hold his breath. In going he ran against the foot of the ladder, and down it came, and 'me too.' When I struck the ground, I awoke. It was only a dream. A couple of robber bees were angrily buzzing around my head.—EUGENE SECOR, *Forest City, Iowa* (*American Bee Journal*).

BACILLUS OUR BANE.

O bogie-like baleful Bacillus,
Untouched by our potions and pills,
You enter to conquer and kill us,
The taint that brings terrible ills.
You lurk in the air and the water,
The presage of peril and pain,
You stride on serene to our slaughter,
Bacillus our bane!

You must have existed for ages,
But ne'er in the past you appear
In mystical medical pages—
When suddenly, lo! you are here.
Though climates be arctic or tropic,
You come with disease in your train:
Seen surely on slide microscopic,
Bacillus our bane!

'*De minimis non curat lex*' is
A motto we've all heard before;
The tiny Bacillus that vexes
No medical man can ignore.
The smallest of things in creation
An eminence high may attain;
You pull down the head of a nation,
Bacillus our bane!

Though some folks deny your existence,
Though fierce physiologists fight,
With painful, unpleasing persistence,
Professors bring new ones to light.
Each boasts of the one he detected,
Its beauties will gladly explain;
Is our admiration expected,
Bacillus our bane?

While knowledge is power, recognition
Of such horrid atoms as these,
Each like a malific magician,
Can scarce be expected to please.
Although we've endeavoured to quiz it,
It smiles vibrionic disdain;
But don't bother us with a visit,
Bacillus our bane!

—*Punch.*

NOTICES TO CORRESPONDENTS & INQUIRERS

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

F. J.—*Sugar.*—The sample of sugar enclosed is a very good one. We should certainly use it. Thanks.

A. T.—Your letter has been forwarded to the compiler of 'Useful Hints.'

'EUREKA.'—*Feeding.*—Cease feeding, and give one comb to the stock, placing it in the centre for the queen to breed in if she choose. If the hive is *crowded* with bees, you may venture to give two combs.

W. F. C.—*Heather.*—We should consider ourselves fortunate if we had an abundance of the plant you enclose growing in the neighbourhood of our apiary.

East Dulwich.—*Salicylic Acid.*—We should say your salicylic acid mixture is still serviceable if the bottle has been kept securely corked.

W. M. B.—*Syrup Making.*—Make up 14 lbs. of sugar with 7 pints of water for a start, you will probably require more if the queen breeds rapidly. Granulated sugar is preferable to 'good lump at 2*d.* per lb.'

Mrs. O'B.—*Honey.*—You will get a fair price for your honey by applying to Messrs. Abbott, Merchants' Quay, Dublin.

Nucleus.—*Nucleus Hives.*—*Nucleus*, singular; *nuclei*, plural. The literal meaning of nucleus is the kernel of a nut; but in ordinary usage the central part of any body about which matter may be collected. In apiarian language a nucleus is a colony of bees on a small scale, which may be strengthened and built up into a stock. Nucleus hives are generally used to enable the bees placed in them to hatch out queens from cells which have been raised in strong colonies. A nucleus may be formed by removing two or three combs from a populous stock, one of which should contain honey and pollen, and the others brood. These may be placed in an ordinary hive, and enclosed by division-boards, so as to conserve the heat. For further information consult Cowan's *Guide Book*, page 123.

R. J. T. Peers.—*To Phenolate Syrup.*

No. 1. Pure phenol in crystals .... 12 oz.
Water ..... 3 oz.
Shake till dissolved.

No. 2. Solution No. 1. ..... 1 oz.
Water ..... 16 oz.
Shake till oily appearance is entirely gone.

No. 3. Solution No. 2. ..... 1 oz.
Sugar syrup..... 16 oz.

R. H.—*Suspected Comb.*—Foul brood decidedly.

S. Booth.—*Floor-boards.*—Entrances *through* the floor-board have not been extensively tried, but it would appear advantageous in cases of robbing, it also provides a sheltered *dry* alighting place in all weathers and an easier descent for any dead bees and *débris* from the hive. We have not tried this style sufficiently to detail the disadvantages fairly.

S. W. B.—*Plants.*—Nos. 1 and 2 are heaths and generally considered of slight honey value. No. 3 is the real heather and certainly should, other things being equal, give a good honey-yield. Do you keep your sections warmly covered up? If not the bees will not keep up in them during heather time with cold nights frequent.

A. B. Tyro.—*Old Honey.*—Judging by the specimen sent we should say destroy it. It is not good. The yellow substance is pollen which is essential. We should recommend you to put *new* foundation in the frames for the bees you intend removing from the box hive.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin
Appleton, H. M., 256a Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Burtt, E. J., Strond Road, Gloucester.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.
Hutchinos, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley & Flood, 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

Abrott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Britisn Honey Co., Limited, 17 King William St., Strand.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Benton, F., Laibach, Carniola, Austria.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Simmins' Bee Company, Limtd., Rottingdean, near Brighton.

METAL ENDS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Edey & Sons, St. Neots.
Godman, A., St. Albans.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.

COMB FOUNDATION MILLS.

Godman, A., St. Albans.

HONEY GLASS MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Blow, T. B., Welwyn, Herts.
Pearson, F., Stockton Heath, Warrington.

NOTICE.

The *British Bee Journal* is published by Kent & Co., 23 Paternoster Row, and may be obtained of all local Booksellers, and of the following Agents:—

ABBOTT, BROS., Southall, London, and Dublin.
ANDREU, F. C., Port Mahon, Minorca.
APPLETON, H. M., 256a Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Stanley Road, Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BROWN, C., Bewdley, Worcestershire.
DURRANT & Co., Booksellers, High St., Chelmsford.
EDEY & SONS, St. Neots, Hunts.
EDMONDSON BROS., Dame Street, Dublin.
HANDBY, W., Hasland, Chesterfield.
HOLLANDS, W., Waddon Road, Croydon.
MEADHAM, M., Huntington, Hereford.
McNALLY, R., Glenluce, N.B.
NEIGHBOUR & SON, 149 Regent Street, and 127 High Holborn, London.
REDSHAW, C., Canal St., South Wigston, Leicester.
RICE, J. J., Wensum Street, Norwich.
RUDKIN, F., Belton, Uppingham.
SMITH & SON, 186 Strand, London; and at all Railway Bookstalls.
WITHINSHAW, A., Newcastle, Staffordshire.
WOODLEY & FLOOD, 26 Donnington Road, Reading.
WREN, L., 139 High Street, Lowestoft.

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Editorial, Notices, &c.

RAPID FEEDING—HOW TO MAKE A FAST FEEDER.

In our article of the issue of the 30th ult. we fully stated the description and quality of sugar required for feeding up our bees for the coming winter. In most cases sugar syrup will be the only stores the bees will have to consume during this period, as natural (honey) stores will be found to be non-existent. Since penning the article in question we have further strengthened our opinion as to the starving condition of stocks in England. So numerous are the cases of starving colonies, even at this exceptionally early date, that we are obliged to confess being of opinion that the quantity of honey produced next year will fall short of the average supply on account of the great loss of colonies that will assuredly take place during next winter.

Although our efforts to prevent as much as possible this disastrous condition of things will be appreciated, and also recognised, by a portion of the bee-keeping public, all will not benefit by our advice, though the majority of modern bee-keepers will, as our *Journal* and its satellite the *Bee-keeper's Adviser* are read by most of the frame-hive bee-keepers in the British Isles; and where our advice is fully acted upon, their colonies will certainly be saved from a premature death. A rough rapid-feeder was sketched in the same article, but many bee-keepers would be ill satisfied with so rough and primitive a method; therefore we will give a description of 'How to make a Rapid-feeder,'—an article within the skill of most, if not all, bee-keepers. The feeder described we find answers so admirably that it seems to leave nothing to be desired as a rapid-feeder. In the following description the size, or rather capacity, can be altered according to the desires of the maker, but upon no consideration ought it to be of less capacity, as it would then require a greater amount of attention than is advisable at the present season. We must always bear in mind that the less syrup is exposed in the apiary the better will our colonies behave.

Having procured two four cut ($\frac{5}{8}$ inch) pine boards, as free from knots as possible, one five cut (half-inch), and another of just under one-eighth inch in thickness—this latter will be cut specially by any respectable timber merchant (some, but very few, keep them already in stock), one of the four cut boards is cut into three strips of full $3\frac{1}{2}$ inches width, thus making them, when planed, just $3\frac{1}{2}$ inches wide. Two of these strips are cut into lengths of $9\frac{1}{8}$ inches and $5\frac{3}{4}$ inches respectively, the third strip, being planed a quarter of an inch narrower, is cut into lengths of $8\frac{5}{8}$ inches. The pieces measuring $3\frac{1}{2} \times 5\frac{3}{4}$ inches are the ends of what, when nailed together with those measuring $9\frac{1}{8} \times 3\frac{1}{2}$, will form a box, minus top and bottom. These short pieces are marked with pencil lines—in the event of the maker not having a circular saw—across their width, thus, at an inch full from each end and every half inch between these lines. Now with a handsaw make a saw-curf of about an eighth of an inch deep along each line, except the two outermost ones. Having cleaned out these saw-curfs from the burr, caused by using so coarse a saw as a hand-saw, two of these are nailed to two of the longer pieces, measuring $3\frac{1}{2}$ inches in width, and so formed into a bottomless box. Now take two of the pieces, $8\frac{5}{8} \times 3\frac{1}{2}$, and place them with their outside edges flush along the outermost pencil line on inside ends of box, and nail them securely in this position. You now have a box with three divisions lengthways, the two outside divisions being just under half an inch, and the centre one full $3\frac{1}{2}$ inches wide. Then take one of the five cut boards and cut it down to 7 inches in width and then into lengths of $9\frac{1}{2}$ inches. These pieces are for the bottom, and are to be nailed in this position on to the pieces already nailed together.

Having thus formed a box, two slots must be cut along the bottom corresponding with the two narrow divisions at each side of box; this can be done with a sharp penknife, or better with a cutting guage: the bottom is then securely nailed along the bottom of the two partitions. We now have a box having double sides, but with a bottom only covering the inner division. Now take some $\frac{1}{2}$-inch strips of wood $\frac{1}{4}$-inch thick, and nail these on the bottom around the outside edge; this forms a bee-space under the box when placed in position for feeding. Then take the thin board and cut it into strips $3\frac{3}{4}$ inches wide, and then into lengths of $8\frac{3}{4}$ inches full. The ends of these pieces are thinned down with a chisel, and slid into the saw-curfs already described in ends of box, so forming seven divisions lengthways, each rather under $\frac{1}{2}$-inch. Before placing in these thin wood partitions each of their bottom edges has four or five notches cut in it. The remaining five cut board is then cut down to 7 inches wide, and then into lengths to form lids; the remaining portion of board (4 inches) can be used as sides to other feeders. The lids must then have two 1-inch centre-bit holes bored at each end, exactly in the centre. Having done this, two cones of coarsely perforated zinc are made, and placed in each of these holes, being tacked in securely at their inner edges to sides of holes and flush with same. Screw to lid two circular tin covers, which are made to shift over the mouths of these two cones. The lid is then placed upon the box, when it will be found that the points of these cones pass between the thin partitions in centre of box and close against the ends of this division, thus effectually preventing any lateral or longitudinal movement of the lid when once placed in position. You now have

a fast-feeder from which a thousand bees can, if they choose, load up at the same time, with plenty of warm space to pass and repass each other in when carrying the syrup to be stored below in their combs. The method of arranging the feeder upon the hive is as follows:—Having removed quilts the feeder is placed upon the frames, the space around the feeder and edge of hive on tops of frames being covered with the quilts folded to accommodate them to the altered shape required. A coarse covering, such a Spratt's dog-biscuit bag—these make excellent over-quilts when washed and folded—is provided for tucking down snugly over and around feeder.

Having everything ready, the two tin covers to cones are slid on one side, and warm syrup is poured into one of them—you thus see they form funnels to feeder. While pouring in syrup the second cone can be watched, and when the syrup commences to rise in this cone the feeder is full. The tin covers are then slid back again over the cone mouths, the feeder wrapped up, and all is finished for twenty-four hours' feeding. These feeders will hold from five to six pounds of syrup. In the case of a weak colony—which, without strengthening, ought not to be wintered—these feeders do not answer as well as a bottle-feeder, as the amount of heat from the hive is scarcely sufficient to keep a nice temperature in the feeder; but with a fine colony the warmth from the cluster keeps the syrup at quite a nice, cosy temperature: this is especially the case when the syrup is given warm. At the first feeding, at least, the syrup should be given at a temperature of blood-heat—that is, if the finger is immersed in the syrup it feels a comfortable warmth—and a small quantity of the syrup should be run down the two outer divisions, allowing it to trickle down the inner side of partitions; this entices the bees to the feeder, and also sets up an excitement in the hive, which materially raises the temperature. Towards evening, at the present season, the bees are very—as we often hear bee-keepers express it—'dummytied.' While in this condition they seldom move about the hive, and, without giving the syrup warm and allowing a 'trail' of it to lead them to the supply, would in some cases fail to feed: this is the *raison d'être* of feeding with warm syrup.

With a strong colony supplied with warm syrup, the excitement of the 'trail' causes such a rise in the temperature that, with the assistance of the heat contained in the syrup, an even temperature, equal to the internal heat of the hive, is maintained throughout the night and the following day; but in order to further economise the heat, the feeder and tops of frames must be covered up very snugly with some warm material that is sufficiently pliable to tuck into all the inequalities occasioned by placing so large an appliance as a fast feeder upon the frames. There is another very great advantage in keeping up such—shall we call it—artificial heat in the hive; it is the assistance thus given to the bees enabling them to evaporate and seal over the supply of stores given them. The present month being so cold, without such a temperature they will frequently be unable to manipulate the wax so as to form cell-cappings. If the stores are not sealed over dysentery will appear, and weaken, if not entirely destroy, the colony. It has been frequently recommended to extract, before packing the bees for winter, all unsealed stores; this advice is good, but it is an enormous amount of unnecessary work, and with a large apiary almost an impossibility. To obviate this, early (September) feeding is resorted to, that before the advent of winter all unsealed syrup may be consumed; also by having very strong colonies fed up from a fast feeder with warm syrup in a hive with frames whose numbers have been so reduced that they will only accommodate the number of bees contained in a hive, and by covering up feeders and frames with good coverings. When all these attentions have been bestowed upon a colony, and they have twenty-five pounds weight of stores, the bee-keeper can, after removing the feeder and packing for winter, rely upon his colonies turning out strong next spring with plenty of bees ready to gather in the harvest, which we all earnestly hope will be as plentiful as has been gathered each year before the advent of 1888.

USEFUL HINTS.

The Weather, we are sorry to remark, does not improve. From one end of the country to the other the cry is the same. There are still to be seen, especially throughout the Midlands and the North, large crops of hay rotting in the fields, whilst the damaged corn remains in shocks, or stooks, and no opportunity is afforded of gathering it into the garners. In the autumn of '79—a year as disastrous, perhaps, as the present—we find the *B. B. J.* full of complaints: *e. g.*, 'Owing to this most inclement season so many frame-hives are not half filled with comb, that hundreds of stocks are likely to disappear during the winter. A few hints on the best system of doubling (? uniting), feeding, and preparation of food, would probably save many valuable lives. I have been feeding both English and Ligurian bees nearly all the summer, and certainly, since Kilburn, except during one week.—J. P., *Penrith*.' The same statement may again be truly made for all parts of the country. What, then, is to be done?

Experts and Associations.—Here is work for our experts and associations, whose objects, we are told, are 'the encouragement, improvement, and advancement of bee-keeping, with a view to bettering the condition of the labouring classes.'

Wheat has already risen something like ten shillings a quarter, and the poor man has to look forward to a dearer loaf, a long winter, and, it is much to be feared, to lack of employment. Can we advise him, with such prospect in view, to expend four or five shillings per hive on feeding his bees? His wife and children may be starving for want of bread! But his bees, unfed, to a certainty will perish. Our Associations divide their territories into districts. One has eighteen of these districts under District Secretaries, Local Advisers, &c.

Now, is it not possible, with such machinery at work, to establish a fund in each district, either for advancing money to the poor members, to enable them to 'feed up' their bees, or to purchase the bees, feed them, and sell them to the original owners on easy terms of payment by instalments when spring arrives? Surely an effort of some kind should be made to prevent the evil foreseen—an evil which, otherwise, will result in the utter loss of the greater part of the cottagers' bees throughout the kingdom. We wish to prescribe neither the method nor the means of procedure. Our object is not to dictate, but to suggest, and we earnestly hope that our Associations will consider the subject before it is too late.

There is no time to be lost.

Rapid Feeding should be commenced at once. Recipes for syrup-making are given in all modern bee-books—in Mr. Cowan's *Guide*, in *Modern Bee-keeping*, and in fifty others, almost all agreeing in the quantities and preparation. Experts and local advisers have the matter at their fingers' ends. With all this knowledge, scattered broadcast over the land, shall we let the poor man's bees die?

Feeders—*The Raynor*.—For the rapid feeding of colonies in skeps many of our authorities consider the 'Raynor Feeder' one of the best. It is a bottle-feeder, which holds a quart of syrup, and from it, when the twelve holes are turned on, a colony strong in bees will take readily a quart per day. Hence, in about a week, a starving colony may be transformed into a healthy one, with full store of winter food laid up for the rainy day.

The Canadian is, in our opinion, one of the best rapid feeders for use on a frame-hive. Messrs. Neighbour's Improved Canadian, exactly fitting the top of a hive containing ten frames, and holding twenty pounds of syrup, enables the bee-master, at one filling, and in a couple of days at most, to entirely provision a strong colony for the whole winter, so that one feeder will suffice for supplying an apiary—say of ten or twelve hives—with winter stores in about three weeks.

Mr. Meadows' '*Nottingham*' *1st Prize Rapid Feeder* is constructed on the same lines as the 'Canadian,' and is equally efficient. It is capable of holding about an equal quantity of syrup, but, being divided into three parts, on the plan of the 'Raynor Divisible Section Crates,' it is more portable, and capable of being used in one, two, or three parts, for supplying as many hives, at a slower rate, of course. Both feeders are constructed entirely of wood, the only material allowable in our view, since no danger of poisoning the bees is incurred, which cannot be said of zinc and other metals. The feeders are illustrated in our advertising columns.

Melted wax should be applied to the inside of the syrup receptacles before they leave the makers' hands, in order to prevent leakage, but if this is not done they should be filled with water and allowed to stand for twenty-four hours before being used.

Sugar.—As regards the quality and price of sugar best adapted for syrup-making we refer our readers to the article on that subject in our issue of August 30, pp. 417–18). 'Duncan's Pearl Sugar' was the best for the purpose we ever used, and we were very sorry to learn, some two or three years ago, that the firm had ceased refining. We now get our 'Granulated Pearl'—as we do many other articles required in the apiaries—from America. It is far more economical to give 3*d.* per pound for a good and suitable sugar than 2*d.* for an inferior article. Economy, truly, is necessary in these hard times, but 'Cheap Johnism' never will pay.

'A thoroughly good article, at a fair remunerative price to the manufacturer,' has always been our motto, and we have no reason to regret it. Again we say, Let feeding be commenced without delay. Breeding will be encouraged thereby, and by the middle or end of next month we shall have the pleasure of putting our bees into winter quarters with every prospect of successfully wintering them—the keynote of all success in an apiarian point of view—and shall look forward hopefully to the honey season of '89, trusting that it may prove as bountiful after the present disastrous one as '80 proved after the disheartening one of '79. Only let the bee-keeper so provide that the bees may be forthcoming to gather in the harvest when it arrives.

Carbolic Acid.—To those who use the acid as a bee-quieter a word of warning is necessary. *Nine* cases of poisoning by this drug have been recorded in the daily papers during the last seven or eight weeks, chiefly by mistake or misadventure. Extreme care, therefore, is required in the use of it. We always keep our pure carbolic under lock and key. The weak solution, for moistening cloths and feathers, is not so dangerous. It should never be carelessly left in places where the ignorant or others may by chance mistake it for other fluids, as the smallest quantity, when swallowed, will quickly prove fatal, and there is no antidote.

Queen Introduction should be completed as soon as possible. Much of course depends upon the weather, but we do not like to introduce after the present month as a rule. The thermometer is now standing at 35 Fahr., and a bitterly cold north wind is blowing—anything but agreeable weather for opening hives and introducing queens.

Before closing up for winter be well assured that every hive contains a fertile queen. We fear that many will be found queenless. There seems to have been a mania amongst the bees for changing their queens, and in many cases they have been unable to provide a successor, owing to the unfavourable season, no doubt. People who fail in life generally become morose, and dissatisfied with all around them. Just so with the bees. When confined to their hives during the summer months by cold and rainy weather, and unable to store food for the winter's supply; aware that a screw is loose somewhere; restless, unhappy, and morose; the blame is too often laid at the door of the poor queen, and sentence of death is passed. The foreign races are said to change queens oftener than the English bees, but of late English and foreign races alike have been practising this amusement to a greater extent than we ever experienced before, so abnormal has the season of '88 proved.

Storifying *v.* Tiering-up.—Which shall it be? There is a tendency in some minds to apply the former word to section-crates (for obtaining comb-honey), and the latter to doubling or piling up shallow hives, containing shallow frames, above the brood-chamber (for obtaining extracted honey). But, surely, we do not require two words to express the action of 'piling up.' A friend sends us the following pertinent remarks on the subject:—'I have been looking up the word "storifying," and find it in Johnson, but it is used in the sense of "*historical*." Webster gives the verb to *storify*, to make stories. *Storey*, or story, a set of rooms on one floor: a story comprehends the distance from one floor to another. Verb, to story, to range under one another, or in stories. *The Imperial Lexicon*, by Brag, gives *storify*, *v. t.* to form stories. So does Nuttall. They all agree that *tier* is a row, a rank. Webster says especially when two or more rows are placed one above another, as a tier of seats, in a church or theatre. There is no verb to tier. I think, therefore, that *storify* is the word we should use, from *storia*, *storium*, and *facere*, to make—to make a store. I think *tier* can only be applied to *rows* of sections, and not to the space given for storing surplus.'

Our Johnson (the largest edition, in two large volumes, 1773) gives 'Story, *v. a.* (not *storify*). 1. To tell in history. 2. To arrange one under another.' Neither in Skeat nor Chambers, Nuttall nor Walker, can we find the word 'storify.'

We are, therefore, inclined to the opinion that it is a modern word, of late coinage; but that is no reason why it should not be adopted. The exigencies of modern art and science are constantly requiring new words, and these are almost invariably formed from the ancient languages of Greece and Rome.

FROM HERTS TO ESSEX.

The story is told of a once very famous Dean (Dr Buckland, the Dean of Christ Church, Oxford) that when he met the farmers of the Vale of Taunton at a dinner, he informed them that the farther he went West, the more convinced he was that the Wise Men came from the East! I ought, then, I suppose, to congratulate myself that a change of occupation and of residence has brought me from West Herts into East Anglia. Essex is said by some to be a very flat and a very marshy country, but the district in which I live is neither flat nor marshy. My house is on the high ground that separates the rivers Colne and Stour, so that we have two rivers at no great distance. The river Colne winds in the valley below us, and on the other side rise hills with waving woods, very refreshing to the eye. And what a country for bees! The deep, rich, fertile soil produces trees equal to any I have ever seen in England, and the lime-trees in full bloom are far more beautiful than those I have ever noticed in Herts. And what a profusion of white clover! The life of a bee in my neighbourhood, during an ordinary summer, must be a perpetual feast. Early in the season acres of turnip seed supply their golden treasure: the charlock ('carlock,' the Essex labourer

calls it), or wild mustard, is far too abundant from May to September; while masses of mignonette are in reserve for those who forage in August.

The best English honey that I have ever tasted came from Essex. When living in Herts I purchased a large quantity of honey from the neighbourhood of Braintree, as the demands of my household, numbering nearly a hundred, were necessarily large. My friend, and now my neighbour, the Rev. W. Marsh of Wethersfield, near Braintree, tells me that his bees in the early part of the season feed on trefoil, winter beans, and mustard. Mr. Cowan has suggested to me that a combination of honey from various sources may perhaps produce the best results. Unless I am much mistaken, two of the prize-winners at the recent show at the Crystal Palace came from the neighbourhood of Braintree, and four or five came from Essex.

A few months after my arrival in East Anglia I learnt that I was more rich in bees than I supposed, for did not three stocks show themselves in the sunny days of spring, issuing from the eaves of my house? A friend, whose 'hints' are always interesting as well as 'useful,' warned me that I must drive out the intruders at any cost. 'For twelve years,' said my friend, 'I was curate to the parish of ——. Bees had settled in the roof of my house. The scent of the wax or of the honey, or some other attraction, drew all the bees towards that quarter. I lost swarm after swarm. One swarm at length settled in the church-porch. The boys of the village used to take long sticks and poke up the bees shortly before the service, so as to sting the would-be worshippers! The nuisance had become intolerable. So we got rid of the bees from the church-porch, and from my house. I advise you to do the same.' This excellent advice I could not but take. So I sent for an expert (not certificated!) who was not afraid (as I am) to mount a high ladder. He came, he saw, he mounted the ladder, and came down again! I was, unfortunately, not at home when he came. But I was informed, subsequently, that I must put up a scaffold and be prepared to pull down part of the main wall in order to eject these intruders. 'Of the greater of two evils choose the lesser,' says the proverb — so the bees are still in possession. Perhaps, nay, probably, this winter will save me any further trouble. Hunger and poverty will probably prove more powerful than any efforts of mine in pulling down a wall or putting up a scaffold.

The 'sulphur-pit' still flourishes, I regret to say, even in enlightened East Anglia! One of my near neighbours is supposed to be clever at bees, but he hitherto has always destroyed some of his stocks each year. So I bought his condemned stocks and drove the bees. In three skeps we did not find three pounds of honey. A good swarm (so described) had not half filled the skep. A few days since I drove five or six lots of bees and did not find five pounds of honey. The destruction of bees this winter in the skeps of the cottagers will be terrible.

An incident that occurred on one of these occasions may furnish a useful hint to others. All went well, apparently, with the driving. Half-a-dozen spectators were present, but no one was stung. An unhappy dog, however, was chained up at no great distance. The bees determined to wreak their vengeance upon him. They stung him to such a degree that the cry of 'mad dog' was raised, and a gunshot concluded his career. Compensation, of course, was claimed, and, as a matter of prudence, paid. A wag has suggested that the well-known warning on the Roman houses, '*Cave canem*,' should henceforth be changed, wherever bees are kept, into '*Canis, cave*.'

Although the sulphur-pit is not altogether out of fashion, bee-keeping in Essex—thanks to Mr. Raynor, Mr. Meggy, and others—has evidently advanced 'by leaps and bounds.' Not long since, when attending a Committee formed for holding a horticultural show in my neighbourhood, I found that a circular had been sent to the Secretary by the Secretary of the Essex Bee Association offering the use of the tent and other advantages. In fact, in whatever part of the county I have been, I have come upon traces of the Essex Association. That very valuable and most important personage, the village policeman of my neighbourhood, is a bar-framist. He lives four or five miles away, so that I have not yet seen his hives, but I know that he has had some honey this year, and the fact that we are both bee-keepers has made us excellent friends.

The year 1888 has, no doubt, been a very disastrous one, but honey has been obtained in some cases. During the spell of fine weather early in the season, one of my hives gave me from twenty to thirty good sections, and the fact that there are bees in abundance close to your fruit trees has a marked effect on the fruit crop. The bees in my roof may hereafter prove a nuisance, but I am assured that I have more apples in my garden than the great majority of my neighbours; and a friend, whose bees I drove recently, pointed with pride to his apple-trees, loaded with fruit, because (as I showed him) he had seven or eight hives close at hand.

The influence of bees on the fertilisation of fruit is scarcely credited as yet as it should be. Two or three years ago I told a friend who has a large garden that the continuance of wet weather while the apple-trees were in bloom would seriously affect his crop. After the lapse of some weeks my friend (a well-known rose exhibitor and meteorologist, but no great lover of bees) pointed with triumph to his trees, which appeared to be loaded with fruit and full of promise. '*Finis coronat opus*,' was my reply. 'Wait until the crop is ripe, and then see how many you will gather.' Before long most of the apples had fallen, and my incredulous friend is now beginning to be a believer in the fertilisation of fruit. Mr. Cheshire puts the point very plainly in the first volume of his *Bees and Bee-keeping*, page 323:—

'The apple is strictly a fusion of five fruits into one, and demands for its production in perfection no less than five independent fertilisations. If none are effected, the calyx, which really forms the flesh of the fruit, instead of swelling, dries, and soon drops. An apple often develops, though imperfectly, if four only of the stigmas have been pollen-dusted, but it rarely hangs long enough to ripen. I examined 200 apples that had dropped in a gale, and the cause of falling in every case but eight was traceable to imperfect fertilisation.'

It is, I believe, a matter of practical importance that the bees should be in immediate proximity to a fruit garden. Even if the weather has been as bad as has been the case this year, there are gleams of sunshine and short intervals which the bees will utilise, to the great advantage of the gardener.

My experience in removing from Herts to Essex may be of some service to those who shall hereafter have occasion to change their residence. I am inclined to think that it is almost better to begin *de novo* than to send your hives and bees by rail. If you can attend to every detail yourself, you may not suffer very seriously; but if, in addition to heavy railway charges, you find your extractor damaged, your combs broken, the legs of half your hives smashed, screws and nails driven in so that they refuse to come out, you will be disposed to regret that you did not begin life again as a bee-keeper, with new stocks and improved appliances in 'fresh fields and pastures new.'—E. Bartrum, D.D., *Wakes Colne, Essex*.

Puzzling the Expert.—*Bystander*. Why is the bee an aristocratic insect?

Expert (*busy*). Eh! Don't know. Give it up.

Bystander. Because its chief property is strictly intailed (*slight pause and then picking one out hastily*). By Jove—it's landed too.—*Reported by* Honeysuckle.

Selected Queries.

[24.] *What is the best cover for frames* (1) *in winter* (2) *in summer? Do you recommend unbleached calico? If not, what do you prefer?*

(1), A wooden frame (at least 1 in. deep), with a loose canvas bottom, fill this with cork-dust from grape barrels, and place it over one layer of hemp carpet. (2), Unbleached calico next the frames, and as many layers of felt as may be necessary to regulate the necessary warmth.—W. M. GRAHAM.

1. Winter covering for hives:—(1), A carefully fitted cover of ticking; (2), a double layer of soft flannel (scouring flannel will do, and so will old blanket); (3), quilt made of three sheets of brown paper and three of druggeting, or thin carpet, or worn-out floor-cloth, or close sacking (the paper and other material are placed alternately and stitched); (4), a piece of Bristol mill-board over the feed-hole; (5), a large bag of sawdust, or cork-dust, or chaff. 2. Summer covering:—Remove the chaff bag. Prefer 'ticking' to anything.—EDWIN BALL.

I find hemp stair carpet as good and cheap as anything for both summer and winter covers for frames. I cannot recommend calico, the bees gnaw it so much. After the carpet is propolised by the bees they do not make many holes in it. Squares of old Brussels carpet answer well, and last for years as quilts. I always use cushions over the carpet quilts, except when the crates of sections are on the hives.—W. WOODLEY.

(1), I use as a cover on top of frames green blind stuff next to the frames, then two or three thicknesses of scouring flannel, and a couple of folded rice or sugar bags. (2), The same as before, only minus the bags. I sometimes use unbleached calico, but do not like it, as the bees gnaw it very much. I prefer the green blind stuff.—JOHN WALTON.

I like calico that has had the dressing washed out of it next the frames in winter, with several thicknesses of house-flannel, pieces of old blanket, or carpets above it. In early spring, when breeding commences in earnest, a piece of American cloth may be used next above the calico. In summer the hives should have supers on all the time.—JOHN M. HOOKER.

(1), Enamel cloth, glazed side downwards. (2), The same; I use nothing else, but cover the enamel cloth with several felt or carpet quilts, giving plenty of ventilation below. I neither use nor recommend calico, which the bees cover with propolis.—GEORGE RAYNOR.

The best cover for frames in winter and summer is a piece of bed ticking, covered with two or more pieces of carpet or flannel. Unbleached calico is soon eaten through by the bees, and therefore not sufficiently durable.—H. WOOD, *Lichfield.*

(1), Thin American cloth, shiny side down, and warm quilt upon it. (2), Thin American cloth, oilcloth, or kamptulicon. We thus better imitate the natural conditions under which the bees live. I do not recommend unbleached calico. Should prefer instead canvas, but before all I prefer, as stated, impervious cloth.—R. A. H. GRIMSHAW.

In winter a stout unbleached calico known as 'duck.' In summer a non-porous cover of some kind. Nothing beats an old calico quilt well propolised, and rendered smooth by passing a hot iron over the back of it.—AMATEUR EXPERT.

I find for my strong colonies enamel cloth answers the best, both winter and summer. In winter I like to have an empty 6-in. storey underneath the hive. For weak colonies in the cold months I use porous material, such as well-woven sugar bags or hop bags, two or three thicknesses, and generally chaff-cushion above. This answers very well, and comes in much less expensive than new material.—C. ATKINSON, *Tockwith.*

Foreign.

FRANCE.

According to the *Apiculteur* of Paris, just received, the month of August has been more favourable to apiculture than July, but the improvement upon its predecessor was not so great as to make up for the ground lost in the earlier part of the season. Bee-keepers are, therefore, strongly advised to feed up their stocks without a moment's delay, wherever this may be considered necessary, in order to ensure safe wintering.

With the death of M. Carcenac, which took place in the early part of last month, the bee community generally, but the Central Bee Association of France in particular, have lost a most sincere and valuable friend. The deceased gentleman was a familiar face at the monthly meetings of the Association, and was noted for his liberal contributions to the prize and other funds which the Association raised from time to time. M. Carcenac was also well known in France for his remarkable rustic apiary, after a Swiss fashion, established in a beautiful estate of his at Bougival, near Paris.

According to the same contemporary, Paris is not now using so much wax as it did some thirty years ago, when its requirements amounted to 100,000 or 150,000 kilos annually. But, adds the said *Journal*, vegetable wax was unknown in those days. It appears that the old fashion of waxing the floors of palaces and of other buildings was a great advantage to the wax trade, which, upon this score, is bound to regret the introduction of carpets. In a few instances the old practice is kept up in a small degree, but then the wax is not used pure.

CANADA.

Cool nights and long evenings remind us that winter is approaching, and, sad to say, we have secured but little honey. There has been no clover, but little linden, some thistle honey, and now in localities where buckwheat is cultivated some buckwheat honey is being gathered by the bees. Some apiaries may secure an average yield of fifty pounds to the colony, and enough for winter, but the majority will be less favoured; in fact, I know of parts of Canada where the bee-keeper has to feed not only for winter, but all that the bees will consume until that time, and have had to feed through the height of the honey harvest. Localities, too, where the average yield per colony for the last four years is over one hundred pounds! Such a season cannot be remembered by the oldest bee-keeper, and gives new patent hives the quietus, as no one has the heart to spend any money in unnecessary directions. We in Canada make more of a specialty of bee-keeping, and many an one who has just had sufficient means to stock an apiary, and has been dependent upon honey for his living, will find himself in straitened circumstances. I know of those who have not enough food for their bees for winter, even who offered half their bees for $2.50 per colony in order to secure enough money to buy sugar for the balance, but could not readily find a purchaser. Of course we all know that a good season will make us forget—perhaps too readily—the bad years for bee-keepers, and every one will be smiling and happy.

Sugar Feeding.—I see by the *British Bee Journal* and standard works that there is one very marked difference between bee-keeping in Canada and Britain that I have not touched upon, and that is, feeding with sugar. It appears to be advocated that bee-keepers shall feed far more than we do here. For winter and very early spring we sometimes feed, but not otherwise, and the majority of bee-keepers are discountenancing even this, as it throws more honey upon the market, wears out the bees as in a honey flow to a certain extent, and at least

gives the occasion to outsiders to say honey is adulterated.

Echinops Sphærocephalus.—The Chapman honey plant, as the above is commonly called, is receiving a more extensive trial this season in America. About one third of an acre is in blossom near the apiary. It appeared to find favour with the bees when other blossoms yielded nectar, and I rather think it may prove a good honey plant. Of course so small a quantity can give no results of practical value.—R. F. Holtermann, *Brantford, Canada, August 22.*

EUROPE.

The Weather and Crops.

Old Earth seems to be crazy. While we in America and those in Central and Southern Europe have been experiencing such cold and wet weather, in Norway the heat has been very uncomfortable. At Nyborg it has been as high as 95° Fahr., and at Christiana it has repeatedly been from 86° to 89° in the shade.

In Great Britain this month has been characterised by cold rains, which have not done so much damage as might naturally have been expected. Everything turns upon the continuance of the good weather to the close of the month.

In France, July has proved an exceedingly unfortunate month. Rain and cold, with very little sun, have damaged the crop prospect in every direction. The critical periods of the blooming and earing were passed under the most favourable conditions; and the complaints, which are increasing on all sides, make a late and deficient harvest certain.

In Germany the weather has been generally cold and rainy, with an occasional day or two of warmth.

The month has not particularly advanced the prospect of the Austro-Hungarian crops.

Up to the 10th of the month the general Russian prospects have seldom, if ever, been so brilliant. Later in the month dangerously persistent rains, accompanied by hail, were common in Southern Russia.

The wheat crop in Sicily has proved very deficient, but an average was obtained in Apulia and the Neapolitan districts. Sardinia has almost lost her entire crop. In Upper Italy the harvest is expected to prove fairly good in quality, but will not reach an average in quantity.

For thirty years the rainfall in Spain has not been so great, or the mean temperature so low all over the kingdom, as in June and July of this year. There was snow at Valladolid on the 16th, and from every direction came news of damage to crops from the unseasonable temperature and the raging gales.

Telegrams from Greece about the middle of the month report that the currant crop was in imminent danger of being lost; the vines being dried up with the scorching wind.

The harvest anticipations in Prussia are quite discouraging. The rye-fields, from which the great masses of Germany derive their chief bread supply, have suffered to a great extent, and the continued inclemency of the weather has likewise done severe damage to the fields.—*American Bee Journal.*

AUSTRALIA.

Eucalyptus Honey.

At a meeting of the Pharmaceutical Society in London a sample of eucalyptus honey was shown, and created much interest from the fact of its containing all the essential properties of those invaluable trees. The existence of this peculiar honey was made known in 1884 by a French traveller, M. Guilmeth, who, while exploring the island of Tasmania, noticed at the summit of one of the eucalypts a peculiar formation, which appeared to him to be a gigantic gall. Having for some time examined it through his glass, he was much surprised to notice that it was frequented by a legion of small black bees, which swarmed around the 'gall,' or hive as it was now revealed to him. A strong desire to possess this hive led him to order his native followers to cut down the tree, which had a girth of seven metres and a height of eighty metres. The men before beginning their work were well protected over the face and hands, while M. Guilmeth retired to a safe distance to watch the proceedings of the bees during the time the men were at their laborious work of sawing through this large tree. At first no notice was taken of them, but as progress was made the explorer was much interested and amused by the sight which met his gaze. A swarm of the bees flew down to within a few yards of the toilers, and after flying around for a time, rapidly returned to the hive, their places being filled by others. This curious behaviour of the bees continued until the tree was sufficiently cut through to be pulled to the ground by ropes. When the tree was finally laid low, the men were instructed to drive away the queen, and this they did after a deal of shouting and beating of utensils. They would have fared very badly had they not been well protected, for the bees greatly resented this interference with their home. The hive and several bees which had lingered were captured, and the honey collected. Upon tasting the honey, M. Guilmeth, much to his surprise, found that it possessed the characteristic odour and flavour of the eucalyptus essences. This he thought so important a discovery as to lead him to forward a shipment of it to a French doctor in Normandy for examination.

Upon carefully inspecting the bees that had been captured, they were found to be of a species not known in Europe, and accordingly the name of *Apis nigra mellifica* was provisionally given to them. They were of a smaller size than the common bee of Europe, and quite black, with a far more developed proboscis. Experiments failed to acclimatise it in Algeria and in France. It is curious to note that in Algeria, where the eucalypts have been acclimatised, it was sought to obtain this honey by means of the Algerian bee. All flowering crops were cut down, and the bees forced to turn their attention to the eucalypts, with the result that the bees gradually died. To prevent a disaster, fresh flowering plants had to be imported. The eucalypts being biennial, this honey is only obtainable every two years; but it does not during that period lose any of its important constituents. It is of a deep orange colour, of a transparent syrupy consistence in warm weather; but in this country it is usually partly solidified. It has the characteristic odour of the eucalyptus essences, and also their flavour. It is said to contain about sixty-two per cent of the purest sugar, and over seventeen per cent of the essential constituents of the eucalyptus, consisting of eucalyptol, eucalyptene, cymol, and terpene, all of which play an important part in the therapeutics of the present day. It was thought that a similar honey could be obtained by mixing these ingredients; and experiments were tried in Paris, but without success, as it was found that the ingredients gradually separated and volatilised off.

Eucalyptus honey is designed to take an important place as a therapeutical agent and as an article of food, on account of the unusually large percentage of sugar it contains and of the presence of the eucalyptus essences, the properties of which as antiseptics and deodorisers are well known. It is usually given in warm milk or warm water. One or two teaspoonfuls twice or thrice daily have produced beneficial effects on bronchitis, asthma, and diseases of the lungs and respiratory organs, producing elasticity of the lungs and a decided increase of the vocal powers. The breath is said to be perfumed, and a sense of warmth and well-being to pervade the body.

The field for such an important honey would almost appear unlimited, owing to its antiseptic properties; and already cases have been recorded of its use in typhoid gastric infection, whooping-cough, and catarrhs. As a substitute for cod-liver oil, the advent of eucalyptus honey will be hailed with delight by all who have to undergo the nauseous experience of a course of this oil, while its nutrient powers are not thought to be inferior. Much interest was created a short time since by the chemical analysis of the famous Trebizond honey, which produces narcotic effects upon all who take it, followed by strong excitement and toxic effects. It was carefully analysed in this country, and its ingredients, when separated, were tried physiologically upon animals with a two-fold object; firstly, to ascertain the nature of the poison; and secondly, to determine, if possible, by this means, the species of plant the bees producing this honey frequented. The result thus obtained led the experimentalists to suspect a certain plant; and communications were made to friends residing in the districts whence this honey was sent as to the names of the plants mostly abounding in the neighbourhood. It was thus ascertained that the bees relied upon a poisonous plant for their honey.

There are now many honeys containing either toxic properties or peculiar odours, which have been traced to the bees frequenting a certain plant; for instance, the Narbonne honey owes its peculiar flavour to the rosemary, which grows so profusely in the neighbourhood. Another instance is that of the Mount Hymettus honey, which derives its flower and odour from the labiates.

With such facts before us, we should not be surprised to see our Australian brethren's example followed in this country, and apiaries started for the production of honey of a distinct flavour, odour, and effect.—*Chambers's Journal*, Aug. 1.

ASSOCIATIONS.

LANCASHIRE AND CHESHIRE BEE-KEEPERS' ASSOCIATION.

This Association held its chief Show of the year in conjunction with the Royal Manchester, Liverpool, and North Lancashire Agricultural Society, at Lancaster, on the 5th, 6th, and 7th of September, 1888. The Agricultural Society made excellent arrangements as regards location for this section of the Show and, in addition to a grant of 20*l.*, provided shedding fifty yards in length, in the centre of which a small platform was fitted, protected on all sides with netting, the canvas roof being thrown open, thus enabling manipulations to be carried on at intervals.

The *B. B. Journal* has during the season drawn attention to what was intended to be the feature of the Show, viz. the County Competition. Unfortunately for all bee-keepers any exhibit in this class was out of the question, seeing that very little honey has been collected in any county throughout the country. Even with this drawback the Lancashire and Cheshire Bee-keepers' Association have to congratulate themselves on having succeeded in getting together a grand display of appliances. The manipulations being carried out by the ablest bee-masters, attracted large and enthusiastic audiences. Mr. W. Broughton Carr took the work the first two days, Mr. Baldwin and Mr. Blow occupying it on the last day.

Class A. Collection of Appliances.—Of six entries, five were staged by those who have attended most of the bee-shows in the country. The collection which took the first prize is stated to be the largest that has ever been exhibited, and though so large there was nothing trashy on the stand; the other prize collections were fully up to the usual standard.

Classes B and C. Hives.—There were fifteen entries and fourteen hives staged in the former, and fourteen entries with thirteen staged in the latter. It was the general remark, when the prize hives were examined by the visitors, 'How are these produced at the prices marked on them?'

Class D. Observatory Hives stocked with Bees.—There were seven entries and five staged. These were quite an attraction, and in placing them at future shows we would suggest that they are given more space, that visitors can see the bees to better advantage.

Classes E, F, and G. Honey.—Taking into account the season, these exhibits were creditable both as to quantity and quality.

Class H. Granulated Honey.—This is a new class. Ten entered and eight were staged; but, taking into account that granulated honey of any year may be shown, we hope to see a larger number of entries in the future, and we would suggest that there be a similar class in the next schedule for sections of any previous year, whether granulated or otherwise. A small award was given for the only lot of sections staged in this class.

Class I. Wax.—The three prize lots were attractively got up.

Class K. Novelties.—The only exhibits calling for mention are No. 976, a hive for the moors, and Nos. 973 and 974, extractors.

Judges.—The Rev. George Raynor and Mr. Cowan took all the Classes except A and C; these were judged by the Rev. J. L. Seager and Mr. Raitt. The arduous work these four gentlemen had can be imagined when it is stated that the former two were kept busy the whole of the first day, and the latter two did not give in the awards for Class C till Wednesday morning, and the result of their labours gave general satisfaction, and the Lancashire and Cheshire Bee-keepers' Association are to be congratulated in having had these four gentlemen—with Mr. W. Broughton Carr—at one time at one of their shows.

Below we give full details of the prizes awarded:—

Class A.—Collection of hives, bee-furniture, and appliances: 1, Abbott Brothers, Southall, London; 2, S. J. Baldwin, Bromley, Kent; 3, George Neighbour and Son, London.

Class B.—Complete frame-hive for general use in an apiary, with arrangements for summer and winter use, capable of being used for tiering to obtain extracted honey, or of being storified with one or two crates filled with sections to obtain comb-honey: 1, T. B. Blow, Welwyn, Herts; 2, Charles Redshaw, South Wigston, Leicester; 3, Abbott Brothers, Southall.

Class C.—For the best and most complete storifying frame-hive with arrangements for summer and winter use, price not to exceed 12*s.* 6*d.*, unpainted: 1, C. Redshaw, South Wigston, Leicestershire; 2, Abbott Brothers, Southall; 3, W. P. Meadows, Syston, Leicester.

Class D.—Observatory hive, to be exhibited stocked with bees (English or foreign) and their queens, all combs to be visible on both sides: 1, George Neighbour and Son, Regent Street, London; 2, E. C. Walton, Preston; 3, T. B. Blow, Welwyn.

Class E.—Exhibition of honey from one apiary, in quantity not less than 1 cwt.: 1, S. J. Baldwin, Bromley, Kent; 2, W. Drinkall, Bank House, Scotforth, Lancaster; 3, B. Alty, Filling, Lancaster.

Class F.—Comb honey in sections, from 12 lbs. to 20 lbs. in weight, the produce of exhibitor's own bees: 1, S. J. Baldwin; 2, William Woodley, World's End, Newbury; 3, Henry Beswick, Tibenham, Norfolk.

Class G.—Extracted honey in glass jars, from 12 lbs. to 20 lbs. in weight, the produce of exhibitor's own bees: 1, Henry Beswick, Tibenham, Norfolk; 2, S. J. Baldwin; 3, Henry Corlett, Ramsay, Isle of Man; 4, C. Atkinson, Tockwith, York; 5, A. Simpson, Mansfield, Woodhouse, Notts.

Class H.—12 lbs. to 20 lbs. granulated honey: 1, S. J. Baldwin; 2, E. C. Kerr, Dumbells Bank, Ramsey; 3, Miss Rawlinson, Temple Sowerby; extra, C. Atkinson, Tockwith.

Class I.—For the best sample of bees-wax (the produce of the exhibitor's own bees) in cakes, the aggregate weight

not to be less than 3 lbs.: 1, Abbott Brothers, Southall; 2, T. B. Blow, Welwyn, Herts; 3, E. Clowes, Hole House Farm, Milton, Stoke-on-Trent.

Class K.—Novelties and useful inventions connected with bee appliances or the products of an apiary: for model hive and pocket smoker, Abbott Brothers, Southall; for two new extractors and a rapid feeder, W. P. Meadows, Syston, Leicester; for Lee's frames with block and Lee's crates with hanging frames, George Neighbour and Son, Regent Street, London.

In Class G the bronze medal of the B. B. K. A. was awarded to R. L. Garnett, Esq., being the best exhibit by any member of the Lancashire and Cheshire Bee-keepers' Association residing in the county.

THE EAST LOTHIAN BEE-KEEPERS' ASSOCIATION.

The show of bees, hives, honey, &c., of this Association, was held in the Side Room, Corn Exchange, Haddington, on Tuesday, 4th September, at the same time that the County Flower Show was going on.

Owing to the backwardness of the season, which is said to be the worst experienced for thirty years, the exhibition of honey was not large. Indeed there were only about 100 pounds to be had, and that was supplied by Mr. G. D. Clark, Kirklandhill. Despite this the exhibition was very interesting, and attracted a great deal of attention. The designs in comb honey were particularly good, and greatly admired by those who understood the difficulties. The initials G. D. C. and the word 'Bee,' were very nicely worked out by Mr. Clark. A glass hive shown by Mr. T. S. Robertson, Westbarns, was specially interesting for the ingenuity displayed, and its fine finish. Frame-hives were a large show and represented the various ideas. There was a varied collection of extra articles, almost all from Mr. G. D. Clark, whose flowers from which honey is collected attracted considerable attention.

There was no competition in Classes 3 and 4 owing to the bad weather spoiling the heather harvest, for which these classes were allotted. This was very unfortunate as this county is noted for its heather honey, and strong competition is usually shown. The judges, Mr. Mason, Dalkeith, for hives and appliances, and Mr. Pringle, Cockburnspath, for honey, awarded the following prizes:—

Class 1—Twelve sections of comb honey (not heather), 1lb. size.—G. D. Clark, Kirklandhill. Class 2—Twelve glass jars of liquid honey, 1lb. size.—1 and 2—G. D. Clark, Class 3—Single super of comb honey, any size (not heather)—G. D. Clark. Class 6—Best design in comb honey—1 and 2—G. D. Clark. Class 7—Observatory hive stocked with bees and queen.—1, T. S. Robertson, Westbarns; 2, G. D. Clark. Class 8—Best frame-hive and super, cheapness and quality considered.—1, Alex. Paterson, Peffers' Place, Haddington; 2, D. R. Taylor, Haddington; 3, T. S. Robertson. Class 9—Anything of extra interest to bee-keepers.—1, 2, and 3, G. D. Clark. Class 10—Collection of bee-furniture, no two articles to be alike.—T. S. Robertson. Class 11—Specimens (cut) of best honey producing flowers and plants.—G. D. Clark.

DERBYSHIRE BEE-KEEPERS' ASSOCIATION.

At the show on August 29th and 30th, although it has been a bad season for honey, the Derbyshire Bee-keepers' Association must be congratulated upon the very successful show of honey, appliances, and frame-hives, &c. The judges, Messrs. Walton, of Preston, and Fisher, of Farnsfield, Notts, must have had no easy task to perform in awarding the prizes, as the competition was very keen, but, nevertheless, their decisions gave general satisfaction. In the hive department it is a wonder to all how the hives could be produced at the money asked for them. The principal makers who had exhibits were Messrs. W. Coxon, of Ambaston; A. Cooper, of Normanton; C. Redshaw, of South Wigston; S. Skermer, of Swanwick; and Messrs. Turner & Son, of Radcliffe-on-Trent. The bee-driving competition was of the usual attractive character, and was as well patronised as on former occasions. Mr. A. G. Pugh, of Ambergate, succeeded in finding the queen-bee in the short space of two and a half minutes. The competition was continued to the close of the second day. The show itself was a great success, and excellent arrangements were made for the comfort of all, which, to a great degree, are due to the services of the Secretary, Mr. W. T. Atkins. The price of honey this year is *1s. 6d.* a pound, which is *6d.* a pound more than in previous years. The awards were as follows:—

Class 2.—Foreign bees.—1, B. Skermer, Swanwick; 2, B. S. Rawson, Selston. Class 3.—English bees.—1, J. W. Rawson, Selston; 2, T. W. Jones, Etwall; 3, W. Handby, Hasland. Class 4.—Best twelve sections.—1, and silver medal of the British Bee-keepers' Association, T. W. Jones, Etwell; 2, Joseph Rowland, Holbrook; 3, John Stone, Little Cubley. Class 5.—Run honey (twelve pounds).—1, and certificate of the British Bee-keepers' Association, J. Stone, Little Cubley; 2, W. Handby, Hasland; 3, B. S. Rawson, Selston; 4, W. Atkins; 5, H. Glover, Rodsley. Class 6.—Beeswax (one pound).—1, W. Handby; 2, J. Stone. Class 7.—Run honey (six pounds).—1, and bronze medal of the British Bee-keepers' Association, T. Wilson, Ashover; 2 and 3, R. Bridges and J. R. Bridges, Harstoft, equal; 4, S. Hadfield, Higham. Class 8.—Comb honey, open to all members, 1, and silver medal of the Derbyshire Bee-keepers' Association, J. Stone, Little Cubley; 2, T. Wilson, Ashover; 3, Joseph Rowland; 4, S. Hadfield, Higham. Class 9.—Beeswax (half a pound).—1, J. W. Rawson; 2, S. Hadfield. Class 10.—Hive by amateurs.—1, W. T. Atkins, North Street, Derby. Class 11.—Fifteen shilling frame-hive.—1, W. Handby; 2, C. Redshaw, South Wigston; 3, W. Coxon, Ambaston. Class 12.—Frame-hive at *10s. 6d.*—1, W. Handby; 2, C. Redshaw; 3, W. Coxon. Class 13.—Supers.—1, C. Redshaw, South Wigston; 2, Turner & Son, Radcliffe-on-Trent. Class 14.—Extractors.—1, W. Coxon; 2, W. Handby. Class 15.—Collection of appliances.—1, W. Handby; 2, A. Cooper, Normanton; 3, W. Coxon. Class 16.—Selling class.—1, A. Cooper.

EAST STIRLINGSHIRE BEE AND HONEY SHOW.

The annual show of above Society was held in the Public Hall, Falkirk, on the 30th and 31st ult., in connexion with the Falkirk Flower Show. The entries for honey in all the various classes were well contested. The chief honours, as will be seen from prize-list, fell to Mr. Wilson, Jun., Grahamston, and also his father. Mr. Wm. Sword exhibited the design 'Let Glasgow Flourish,' which was much admired, and had it been sealed and finished would have taken first place, the first-prize design, of Mr. Wilson, Jun., being a wheel, well sealed and finished throughout. The class for display of honey was well represented. The judges were Mr. William McNally, Glenluce, and Mr. D. Gordon, Tolleross, near Glasgow, whose awards gave every satisfaction. Appended is prize-list, viz.:—

Observatory or unicomb-hive, stocked with bees and their queen: 1, Wm. Wilson, Campfield Street; 2, Wm. Wilson, Gordon Terrace. Single super of flower-honey in wood or straw, not less than 16 lbs.: 1, W. Wilson, Campfield Street; 2, W. Wilson, Gordon Terrace; 3, Wm. B. Watson, Falkirk. Single super of flower-honey in wood or straw, not less than 10 lbs.: 1, W. Wilson, Campfield Street; 2, W. Wilson, Gordon Terrace. Run or extracted clover or flower-honey; 1, W. Wilson,

Campfield Street; 2, W. Wilson, Gordon Terrace; 3, W. Sword, Bonneyview. Display of honey: 1, W. Wilson, Campfield Street (Silver Medal); 2, W. Wilson, Gordon Terrace; 3, Wm. Sword. Best super-honey, above 20 lbs.; 1, 2, and 3, Wm. Wilson, Grahamston. Best super-honey, under 20 lbs.: 1 and 2, W. Wilson, Grahamston; 3, Wm. Baird, Carron Lodge. Best design in honeycomb: W. Wilson, Grahamston. Run honey, not less than 7 lbs.: 1, W. Wilson, Campfield Street; 2, W. Wilson, Grahamston; 3, Wm. Sword, Bonneyview. Best six sections: 1, W. Wilson, Campfield Street; 2, W. Wilson, Grahamston; 3, Wm. Baird. Wax, not less than 2 lbs.: 1, Wm. Sword; 2, W. Wilson, Grahamston.

FLOWER SHOW AT STRATHPEFFER, ROSS-SHIRE, N.B.

The most northernly bee-show in Scotland came off in the Large Pavilion of the now fashionable health-resorting district of Strathpeffer. The flower show was also held in the same hall. The place had been illuminated at night, and a conversazione, promenade, and vocal concert, took place in the evening. The show of flowers and fruit was very good, and considering the backward season the honey staged for competition and sale was very good, and found a ready sale at 1*s.* 6*d.*, 2*s.*, and 2*s.* 3*d.*, in 1-lb. sections. The first prize for bees in an observatory hive was awarded to Mr. J. H. Bisset, the Schoolhouse. It proved a great attraction during the whole day, hundreds of young and old crowded around it from morn till night, each as eager as at Glasgow to get a glimpse of the queen. No extracted or run honey was shown. The exhibition of section honey was an interesting one. The entries were not numerous, but the quality of the honey forwarded was considered to be very satisfactory. The arrangements of the Hon. Secretary (Mr. Bain, Stafford Villa, Strathpeffer), who was assisted by Mr. J. F. Macaulay, Castle Leod, as acting Secretary, were efficiently carried out. The judges of honey and bee-keeping were Mr. Ross, Stranraer, and Mr. Reid, Balloan.

The prize list is as follows:—Best display of honey in sections of 1 lb., 1½ lbs., 2 lbs., or all combined, total weight to be under 20 lbs.—1, Mr. David Morrison, Leckmelm; 2, Mr. W. Ross, Kinnahaird; 3, Mr. John Matheson, Contin. Best straw super, any weight.—1, Mr. A. Simpson, nurseryman, Dingwall; 2, Mr. Kenneth Mackenzie, Parkhill Cottage; 3, Mr. Matheson, Contin. Best straw super, heather honey.—Mr. Matheson. Best glass super (special).—Mr. Morrison, Leckmelm. Best 2 lbs. of wax.—Mr. J. H. Bisset, Fodderty. Best observatory or unicomb hive.—Mr. Bisset. Best collection of bee-keeping appliances.—Mr. Hugh Fraser. Best bar-frame hive of local (Ross-shire) make, to consist of one-storey hive, with roof, floor-board, and section crate, price not to exceed 10*s.* 6*d.*, and to be supplied to members of society at that price. Special prize by Mr. Raitt, Blairgowrie, of 5 lbs. brood comb foundation, with 1*l.* added by Society.—1, Mr. Hugh Maclean, Marybank, Muir of Ord; 2, Mr. Hugh Fraser, Coul Wood Cottage, Strathpeffer. Hive of last year's honey.—Mr. Hugh Maclean, Marybank.

Mr. Grant, carpenter, showed a well-made double-walled bar-frame hive of local make, and Messrs. Ross & Co., ironmongers, Dingwall, exhibited a complete bar-frame hive, with sections and feeders, and samples of wax comb foundation. Samples of this hive can be seen now on view in the Glasgow International Exhibition, court 18, stall 5, viz., Steam Factory for Bee-appliances, J. Ross, manager, Stranraer.

We are informed by experts that Strathpeffer, and the surrounding district, on account of its salubrity and other natural advantages, forms one of the best places possible for the rearing of bees and the production of honey. This is an industry much neglected in the Highlands, but one which, capably managed, should result in both pleasure and profit to those who engage in it. A lecture, delivered in the Pavilion in July last year, on 'The Humane Treatment of the Honey Bee,' with illustrations and appliances, by Mr. James Ross, Stranraer, and which had been favourably reported and commented on by the local press, helped much to popularise the subject of bee-culture, and create a demand for bee-literature, which is now bearing fruit.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements.)*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

HONEY IMPORTS.

The value of honey imported into the United Kingdom during the month of August, 1888, was 1365*l.*—G. METCALFE, *Statistical Office, Sept. 5.*

THE JEWS' APPRECIATION OF HONEY AT THEIR FEASTS.

[1793.] I have often noticed at this season of the year that there has been rather an unusual demand for honey in the combs, the customers for the most part bearing evidence of belonging to the Jewish persuasion. This year there has been no diminution in this respect, and our supplies (being rather limited, owing to the unfavourable weather) have been largely drawn upon—which has led me to make inquiries into the cause of this consumption of honey by the Jewish people, and I find that it is on the occasion of the first day of their new year. This occurred last Thursday, the 6th inst., being the first of the month—'*Tishri*, 5649'—and as it is a festival day, also the harvest season when most kinds of produce have been gathered, the new fruit, &c., are partaken of at mealtimes, because the opportunity admits of the *additional blessing* being said before eating the new ripe fruit. *New honey with new apples* makes an excellent *bon bouche*, and is greatly appreciated on the occasion. My informant tells me that observant Jews whenever partaking of food always repeat a certain short blessing of thankfulness, and an additional one when the fruit or produce is the first of the season. Moreover, their festivals are days of gladness as well as of prayer; and in what better way can people display their pleasure and gratitude than by the sober enjoyment of the good things in season, more especially by a community who are the descendants of the inhabitants of 'a land flowing with milk and *honey?*'—ALFRED NEIGHBOUR, *Regent Street, September 10th.*

IN THE HUT.

'Oh, try no more these tedious fields,
Come taste the sweets my *feeder* yields!'

[1794.] Thus do I apostrophise the only remaining tenants of my bee-garden, the observation bees housed within the hut. The view through the window is somewhat like that from the Speaker's Gallery—it is a question of empty benches, the other members are off to

the moors. Even there our ill-luck has accompanied us the weather being what we term 'six to one.' Our poor bees can only get food from hand to mouth; we are consequently having to feed (the bees) at the heather—a rather humiliating fact, I must admit; and I can assure you that the carrying a stone or so of sugar behind one on a cycle for eight miles to a thousand feet elevation is such a labour of love that we would be delighted to change it for the more congenial task of bringing a box of heather sections home downhill.

Dr. McPherson (*Scottish Nights*) is quoted by you, page 398, as stating that eucalyptus honey will not do for Athol brose, as it will not dissolve in alcohol, and he proceeds to give you the Scotch recipe for this true Olympian nectar, a cure for a cold, thus: Equal quantities of honey and whisky mixed together till the honey is dissolved. I think if the Doctor had used the formula I gave you some time ago, obtained at Blair Athol, *i.e.*, equal parts of honey, cream, and whisky, he would find the cream an excellent flux or emulsifier for his obdurate honey. Don't try eucalyptus honey, by the way, unless you like to lick paint-brushes.

It is pleasant for the mind to wander back to swarming time, so let me, although thus late, 'bang Banagher' by assuring you that one of my neighbours hived a swarm weighing $24\frac{3}{4}$ lbs. nett weight. Of course it was a mass of bees formed by five or six swarms which had taken it into their heads to throw in their lot together. My friend assisted them by filling three large skeps, and tiering three empty hives. He threw in the lot together. Speaking of tiering hives reminds me of a saying of Fuller's, that, 'Often the cockloft is empty in those whom Nature hath built many storeys high.' I only apply this to the hives, bear in mind, so I hope the Jerkes of that ilk won't come down with their thunderbolts about X-Tractor's head.

I am amongst those who believe the Combination principle (not Co-operative, 'A. E.!') is the best, and I have been somewhat disgusted to find it condemned on the ground that one cannot, when using frames parallel with the entrance, tilt the hive up at the back, so as to allow moisture to run out of the hive door. This is not correct, for when there is danger of comb being built crooked, that is, in the height of the season, the floor-*board* may be tilted up a bit behind and the *hive* similarly treated in front to the same degree, two bits of chip do the lot and the frames are true. We thus get the required ventilation, and I really don't see what moisture is to run out at that time. As for winter and spring work, the inclination may be given at the back only, for the combs are then built and set.

With regard to martins and swallows feeding on bees, the recent correspondence on this point seems to have convinced two or three sceptical readers that if 'one swallow does not make a summer' it often makes a pretty successful spring.

In 'Jottings' by 'Amateur Expert,' Mr. Alley says, 'Only one kind of honey is stored in any one cell.' This is quite contrary to my experience. The honey I prefer is heather mixed with fruit-blossom honey, and to obtain this I keep partly filled sections, capped and uncapped, in all stages, the cells are filled up the following summer, and the trace of the heather can be distinctly seen by its darker golden colour on being held up to the light; besides the mixture can be seen and tasted. My friend 'A. E.'s' microscopic test would not, I think, be a sure one, foreign pollen-grains wander about all over the place. Let me finish by giving you the latest reading of Milton's: —

'Linked sweetness, long drawn out.'

Mr. Cheshire tells us on page 96, 'the bee can sip a stream of nectar so fine that 600 miles of it will, when evaporated, store but a 1-lb. section box.' It would also fill the—X-Tractor.

THE COMBINATION PRINCIPLE.

[1795.] Perhaps some of your able correspondents will kindly explain what is the Combination principle which 'C. N. A.' champions so strongly? Is it simply the placing of frames parallel to the hive entrance, or is it this in combination with a certain length of hive from front to back, and without space or arrangements for a second row of frames above? We were promised an explanation in a pamphlet, but though I have written for it several times, it is not yet out. In the answers to the query on this subject lately, it is quite plain that the Combination principle did not convey the same meaning to all minds. It is quite true that storifying (or tiering) is very old (as the hills?), and it has been long and *successfully* used in Scotland, and is so yet, whatever 'C. N. A.' may say. It would be interesting to waken out the 'Renfrewshire Bee-keeper' on this subject, as I well remember how he praised tiering (?) in my hearing years ago. The Americans coined the name, it is true, but what of that? It is not of much consequence what name is used if the results are satisfactory. My own hives are made with frames parallel to the entrance, but all are capable of tiering, or storifying, or whatever name it may go under. Are such hives Combination, or are they not? I must say the results are good anyhow. There are a few more than Mr. Raitt who think that the tiering system is being pushed to the front in the south, but it is a long time since it came first in use hereabout. Speaking to an old bee-keeper near me a few days ago, he pointed out an old hive in his stock and said, 'The first queen which led a swarm into it was an Italian, in the days when each cost about 10*l*. That is some time ago, and yet the hive was a tiering frame-hive, very simple, square, with short frame-ends set in nicks in hive sides. Without plinths, or other elaborate means to keep out the wet, it had successfully been used year after year.' Is it not 'C. N. A.' who has the new thing, and is trying to push it into favour? Though he has no interest in it, except that he believes it to be a good thing, yet this is enough to make him use strong language in its support! Each likes his own child best. Through all 'C. N. A.'s' writings there runs the sentiment that tiering is a bad system, and I would respectfully ask him, How is it bad? It has been found good in Scotland before his system of long hives was in existence, and it is still largely supported here. True, some use frames parallel and some at right angles to hive entrance, but does that alter the tiering principle at all? The hives of the old bee-keeper mentioned had been used both ways, and he was surprised when I asked if it made any difference. He said 'No.' The above has been penned in the hope that it will be clearly explained wherein the two systems differ and diverge. —Dunbar.

THE COMBINATION PRINCIPLE. (1780.)

[1796.] I am sorry not to be able to agree with Mr. Abbott as to the advantage of having the frames in hives parallel to the entrance. In advocating their use I have no '*axe to grind*,' or '*any friend to serve*,' and I should indeed be sorry to injure any one intentionally by so doing. I, like Mr. Abbott, formerly designed several hives for which I received medals. These hives all had the frames at right angles to the entrance, and I claim an equal right with Mr. Abbott to advocate the principle I then adopted, and have since proved to my own satisfaction to be the best, and therefore recommend this system to others. I do not claim any originality for this plan. '*The Stewarton hive*,' '*Major Munn's hive*,' '*The Langstroth hive*,' '*The Woodbury hive*,' all had the entrance at the end of the frames. In nearly all skeps the combs are end on to the entrance, if the floor-board is anything like level, or highest at the point opposite to the entrance. I have taken up a good number of skeps

in my time, and have found when this rule is departed from by the bees, the floor-board slants from one side to the other across the entrance, and the combs are built longitudinally with the fall, and this is one additional reason for raising the hive at the back that the combs may hang in the manner the bees prefer. In a hive without frames they will always commence to build from the highest point.

It would be interesting if those who are about to take up skeps of condemned bees would carefully notice the position of combs to entrance and see if they cannot account for any variation from the general rule and report to the *Bee Journal*.

Does Mr. Abbott claim to be the originator of the parallel-frames principle? It would, I think, be interesting to many of your readers if he will explain both the combination system and the way he works his hive also.

Mr. Abbott says, 'I beg leave to thank you for the honour you have done me (?) in your recognition of the principles involved by inviting opinions on the relative value of frames parallel with and at right angles to hive entrances, and to express deep satisfaction with the consensus of opinion set forth thereon. Out of eleven prominent bee-keepers replying to Query No. 22 on the subject, only a very small minority favour the right-angled system.'

I cannot allow this statement as to the small minority in favour of the right-angled frames to pass without comment. There are five who express a *decided* opinion in favour of right-angled frames, namely, Mr. Raynor, Mr. Howard, Mr. Edey, Mr. Tom Sells, and myself. For the parallel frames, Mr. Abbott, Mr. Beswick, and Mr. Wood, making three who express an unqualified preference for the latter. Mr. Woodley says he has hives with frames both ways, and finds no difference as to the well-being of the bees, but prefers the latter for working. Mr. E. Ball and Mr. John Walton think it does not matter one way or the other. I may mention two well-known bee-keepers who have also expressed their opinion in print in favour of the right-angled frame, namely, Mr. Broughton-Carr and Mr. Raitt.

Mr. Abbott goes on to quote what I say:—'The majority of most advanced bee-keepers, both here and in America, use hives with frames at right angles to the entrance.' I am still of this opinion, which is confirmed, I think, by the answers to the following question in 'Gleanings:'—*'Do you prefer the entrance at the end of the frame? Why?'* There are eighteen answers. Twelve prefer the entrance at the end of the frames, and six think it makes no difference, and some of these use as many frames one way as the other. I copy some of the answers:—

'This is much debated in Europe, because the Berlepsch Hive has the entrance on the side. We prefer the Langstroth way, because it gives the bees and the air access to all the combs readily. Besides, we can slant the hive forward, for the escape of moisture, *débris*, &c., without causing the frames to hang out of the perpendicular line.—Dadant & Sons.'

'I do. To assist the bees in getting out with a worm, when they get one by the collar, the hive should be tilted forward; and this will not do when the combs run crosswise, or is it because I'm a *Yankee*, and the "*stupid Britishers*" all use side entrances?—E. E. Hasty.'

'We like to have the bottom-board slope slightly towards the entrance, then rain or melting snow will run out instead of in. If a hive does not stand level, then it ought to slant lengthways of the frames, otherwise they do not hang square with the hive.—W. Z. Hutchinson.'

'Yes; because I can tip the hive, making the entrance lowest, aiding the bees in keeping the hive clean. Besides, it is more natural for them to climb up than down or on a level. If the frames run crosswise, you can't tip the hive toward the entrance without throwing the frame out of the desirable vertical position.—James Heddon.'

'The Dzierzon method favours the so-called "*warm-frame arrangement*," *i.e.*, the brood-frames hanging crosswise of the entrance. I prefer the so-called "*cold-frame arrangement*," that is, the entrance at the ends of the brood-frames, because any part of the brood chamber is of easier access to the bees. Besides, practical results have proved Langstroth's arrangement superior to Dzierzon's.—Chas. F. Muth.'

'Yes. The bees have more ready access to all the combs as they enter. The brood-nest can be more desirably contracted with combs in this position. Ventilation, with a proper entrance, can be made more thorough. It is also often very desirable to have the hive stand so that the front is lowest, without throwing the combs out of their perpendicular position.—L. C. Root.'

'Yes. Well, perhaps because it is the fashion, and I never tried any other way. At least, that's the principal reason. I suppose it allows a better chance for ventilation, and for ready access to all parts of the hive.—C. C. Miller.'

'Yes, for one particular reason. The hive should always be tipped towards the entrance, to allow water to run out of, and not into the hive, as well as for other reasons, and the combs will not be built true in the frames if they are tipped sidewise.—O. A. Poppleton.'

'Well, friends, this is pretty good. We can rest satisfied that it does not make any difference about the amount of honey stored, whether bees go into the hive sidewise or endwise; but so far as aiding the bees in house-cleaning, expelling intruders, &c., is concerned, the endwise doorway offers best facilities. It seems, also, as if an entrance, full width of the hive, with combs running endwise, must offer the bees better facilities for perfect ventilation.—A. I. Root.'

I should not have presumed to have occupied so much of your valuable space, but my name was referred to in such a way I felt bound to reply, at the same time I can assure Mr. Abbott I have not the least unfriendly feeling towards him or his Combination hive, but I much prefer the more modern production of the Southall establishment, 'The Guyton Hive.'—John M. Hooker.

LESSONS AND EXPERIENCES.

[1797.] I notice with pleasure the opportunities you continually afford to novices for expressing their opinions, and for seeking advice from yourself and your experienced correspondents. I therefore take the opportunity of giving my small experience, and I intend in future, with your permission, to become a contributor to your columns whenever anything comes under my observation likely to be of interest to those readers of my own limited knowledge in bee matters. For my own part, I read with great interest, and learn much practical knowledge, from the communications of your inexperienced correspondents. I take it, that this is a very general feeling among the uninitiated for the reason that those elementary difficulties are brought under observation which are apt to be overlooked by more advanced masters of the art. But to the subject! My experience only begins as from the year before last, when I bought a stock in a straw hive at some little distance from my residence, making my first mistake by doing this in the middle of the summer. The hive was brought by rail, and when it arrived (late at night) I found that, after it had been standing in my garden a little while (upside down), there was something wrong. There was a great buzzing, and on making our examination I found that the cloth over the opening had somehow got disarranged and that the bees were out, and, I feared, 'on the war-path.' The honey I also found was flowing freely from the hive. However, we got the hive on a stand in the garden the right way up, and left them till morning.

The next day I obtained the assistance of a local expert, and on arriving at the scene of operations we found matters in a dreadful state, the combs all broken down, and the bees, as the expert described it, 'all over the

shop.' Much to my dismay he took his coat off, rolled up his sleeves, and, lighting his smoker, went to work. I viewed his operations from a safe distance in wonder. I had provided a bar-frame hive, and after much trouble the combs were got in something like order, and tied into four of the frames with tape, and the hive adjusted. The smoker was again brought into requisition, and most of the bees seemed eventually to settle down in their new quarters, not, however, without giving the 'expert' something for his trouble. He said the reason of this was that there were bees from other hives present sharing the spoil of spilt honey. He did not succeed in finding the queen, and had grave doubts as to her majesty having survived the general wreck. We took a nice lot of comb-honey from the old hive, left the remnants for the bees to clean out, and departed.

On going to view the scene of operations next day, matters appeared to my uninitiated view to be progressing satisfactorily. Being advised to leave things *in statu quo* for some time, I did so for a week or two, till I became convinced that everything was not going on as satisfactorily as I at first thought—very few bees going in and out at the entrance. An examination was then determined on, with the result that not a vestige of brood was visible, and the suspicion as to her majesty's non-existence became a certainty.

A friend of mine who had just superseded a three-year-old queen offered her to me, and I gladly accepted his offer. We introduced her under the quilt late one night, and again waited on events. I did not see the hive again for a week or two. Here, however, I had made mistake number two. I had left the entrance wide open, with the result that when the next examination took place ruin and desolation were disclosed. It was, indeed, a city of the dead. Deserted combs; not a drop of honey; dead brood, sealed and in all stages: robbing, murder, and pillage, had evidently been rampant, and your humble servant was beeless. The only thing I had for my money and trouble was experience.

The morals learnt were:—1. Never buy a straw skep after the early spring months. 2. Examine a hive shortly after a transfer to ascertain if the queen is safe. 3. In the autumn never leave the door of a weak stock wide open.

I purpose, in future numbers, to give some of my further experiences and lessons learnt if you, Mr. Editor, consider them sufficiently interesting for the general body of your readers.—H. P. D.

[We shall be pleased to hear of your further experiences.—Ed.]

BEES IN MALTA.

[1798.] A passing good season. It is my first, and all my stocks are very weak and in bad condition; irregular combs, &c., which had to be replaced, and the time almost all taken up in getting them right. However, I have learnt a thing or two.

First of all, as regards the position of frames. I don't think the bees care which way they rest, but I do. My hives are double where the shoulders rest, and single on the other two sides. If the entrance is through the double side, there is, of course, a kind of tunnel, whereas, if cut on the single side, there is only the thickness of the wood. And wherever this is the case, the bees have built a barricade across, beautifully loopholed, and generally secured to the first frame. So no more single fronted hives for me, unless made with a tunnel.

The native bees are frightful robbers, and this is probably a precaution against the enemy.

I have been much puzzled over one hive, fairly strong, and yet without a scrap of stores, while the rest are pretty well off. But the *B. B. J.* of the 30th August opened my eyes by letter (1776) on Robbing, and on searching I found two large cracks in floor-board. Robbing made easy.

Hornets are a trouble, and as they build in the loose rubble walls, and not underground, are difficult to dislodge. I found a nest just outside my garden, and morning and evening I pay them a visit, armed with a butterfly net, and catch them as they come in and out. The first evening my bag was 68; next morning, 20; evening, 38; and yesterday only 16. Now I shall plaster up.

R. I. P.

QUEEN INTRODUCTION.

CARNIOLANS *v.* ITALIANS.

[1799.] I was pleased to note the letter from Mr. Pond in a late issue, giving particulars of his method of queen-introduction. During the last five weeks I have introduced no less than twenty-six queens in my own apiary. And all except one on the direct method. In this way:—Some time during the day examine hive for queen and cells, all of which must be removed; then, in the evening, when all is quiet, either let the alien queen run in at entrance, or raise the dummy-board a little and let her run in there; close all up again quietly and leave them at least three days. I have even done this in the middle of the day in a few instances, and have had only one failure.

All through this year I have had Carniolans, Italians, and Blacks running side by side, and, without exception, the Carniolans have done the best, both for breeding and activity (among the workers). I believe Italians—when *pure*—are very gentle, but do not equal the Carniolans. They are not so hardy, and do not keep combs so white and clean as Carniolans. A cross between a Carniolan drone and Italian queen is very good, also between Carniolan drone and black queen; but of the two I prefer the latter. If 'Sherborne' will try this he will have no difficulty—under good management—in having forty frames covered with bees at the beginning of June.

The season here, like in other places, is a complete failure. In transferring several stocks from straw hives to bar-frames, I have found the great majority entirely without food, and some of the bees fall off the combs quite exhausted.

I will ask opinions on a freak these have done. A friend of mine here (an old bee-keeper) made up a nucleus for the purpose of giving an Italian queen-cell. After giving three or four frames of hatching-brood, with adhering bees from other hives, he inserted queen-cell. All went on all right for a week, when, on opening, he found them short of food; so taking a frame two inches wide containing food from the back of another hive, he placed it at back of this one. Two or three days later he opened the hive, and found four queen-cells started on this frame. Now where did the eggs come from, as they were not in the frame when putting it in, and the young queen had got lost?—Chas. Howes, *Cottingham.*

REPLY TO EAST GLAMORGAN (1766).

[1800.] I did not intend troubling you with the explanation 'East Glamorgan,' *alias* 'Welsh Novice,' asked for in your issue of August 23rd, 1888, because I felt that anything I could say would not be of sufficient interest to your numerous readers to warrant my asking you for room in your very instructive *Journal*, but as Mr. E. J. Gibbins, of Neath, has been kind enough to show 'East Glamorgan' that it is possible for fifty-eight pounds of honey to be gathered in six days, where there is a good honey flow, and that from blackberries. Although 'E. G.' says Navigation is a poor place for bees to get honey, Mr. William Gay, the Glamorganshire bee expert, says he never saw a better place, or bees do better than mine have, taking all things into consideration

'E. G.' cannot know much about Navigation, or he would be aware that we have, close to our apiary, one wood about two miles long, and half a mile wide, where tons of blackberries and wild raspberries are collected most years. There is also a good supply of other honey-producing flowers coming on in rotation, from 'the blue-bells to heather.' The atmospheric conditions of late have quite puzzled me, so I will say no more on that point, but leave it to 'E. G.'s' fertile brain to solve. Now about feeding; I have not had occasion to feed at all since the spring, and then not very much; some of my sections are, and have been on sale at Pontypridd: and if 'E. G.' would purchase a few, he would, perhaps, be able to tell whether pure or not, but then I don't think he would—I have just thought about the way he hefted or lifted the frame without first removing the quilt. Well, I hope 'East Glamorgan' will not try to discourage a young beginner again, and that he will, in future, give his name, we shall then, perhaps, be able to judge whether he knows anything about bee-keeping or not. He may be a very clever man, and have a large well-managed apiary, or he may be a 'duffer,' who can tell? I forgot to say before that it was honey and not brood that my frames contained. I know the difference (dear) 'E. G.,' if only by the taste.

I have sent you a section per parcels post, Mr. Editor, perhaps you will kindly say whether it is pure or not; and if such rare quality is a treat to you, you have only to say so, and I shall be pleased to send you a dozen or so.—A. H. Sims, *Navigation, Treharris, R.S.O., Glamorganshire.*

[We have received the section, for which thanks. There can be no doubt as to the purity of the honey. It is of good quality and exquisite flavour; it is the best we have tasted this season. We are much obliged by our correspondent's generous intentions, but would respectfully prefer not to avail ourselves of his kind favour.—Ed.]

PERCENTAGES.

[1801.] Percentages, if rightly considered, play a most important part in practical bee-keeping, for we have it almost generally agreed that a very small percentage of sections is spoilt by the queen when no excluder is used above the brood nest, and that the hindrance to the bees is far in excess of any advantage gained by the use of the excluder.

Another interesting question is, What percentage of hives swarm under any non-swarming system? My experience is, that by tiering up, and giving plenty of room, not more than three per cent will swarm. Consequently, in an apiary of six hives we shall probably have only one swarm in five years; and, therefore, it is not worth watching during the swarming season for five years; or reckoning for each year thirty days of six hours each, making an average of 900 hours watching for a single swarm. Truly the game is not worth the candle.

Now, I should like to ask some of your correspondents what their own and knowledge of others' experience, Is the average percentage of stocks lost during winter to be attributed solely to the absence of winter passages through the combs? I am strongly inclined to believe we should find in that case also the trouble in excess of results. I have watched the *Journal* for years, and read most of our 'leading lights,' and yet not seen an explanation of the 'reason why' able to convince me that it has any actual advantage over the Hill's device, or any similar arrangement giving a passage over the frames and under the quilts.—Honeysuckle.

The Bee and the Honeymoon.—The wedding dress of the Princess Letitia, who is shortly to be married to her uncle, the Duke of Aosta, is to be embroidered with bees, the emblem of the house of Bonaparte. No doubt the 'going away' costume of this young lady, who has made so singular a choice in the selection of a husband, will also include a bee—in her bonnet.—*Punch.*

Echoes from the Hives.

Cottingham, September 3rd.—Season here an entire failure. Everybody feeding. What honey has been gathered was all consumed long ago. Many cottagers will doubtless lose all their bees during the next winter either through ignorance or carelessness.—Chas. Howes.

North Riding, Yorkshire.—The heather season now is a complete failure. From the time the hives went to the moors, three weeks ago, there has never been a single day fit for honey gathering. Numbers of bees have already succumbed to the weather. Considering the terrible summer the bees have had to contend with, and having been transferred to the moorland without the least particle of honey in the hives, and not having been able to be fed, the prospect is that bees in this part of the country must, ere next spring, be all but extinct. There is yet the forlorn hope of what is termed the 'gleanings,' should the weather hold fine for five or six days longer, and with good feeding after their return from the moors, a few hives may still be pulled through the winter. Mr. Charles Trueman, a large bee-keeper, who recently took thirty hives to the moors in fair condition, and fed up to the time of going, informs our correspondent that during the first seven days they were located on the uplands some two or three hives died off, and that it is with the greatest difficulty that the others can eke out a bare existence. The present season has been exceptionally unfavourable, as the bees, so far, have not succeeded in making honey during the summer, and there is now little or no prospect of any autumn gathering.—*Yorkshire Post, September 7th.*

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

W. Goodall.—*Sugars.*—No. 3 sample is the best quality sugar, and would be the most suitable for making syrup. The other sugars would also be serviceable for this purpose.

A. Turkington.—1. The 'Improved Raynor Pipe Cover Queen Cage' is always kept in stock by Messrs. Neighbour. We believe Mr. Meadows, Syston, Leicester, also supplies it. 2. *Introducing Queen.*—Yes, but the earlier done the better. The 'direct' method might be tried. 3. *Queenless Stock.*—Give them a queen.

J. J. B.—*Queen-piping.*—It is generally known that young queens pipe whilst yet in the cell, in answer, it is supposed, to a young queen hatched out and about to lead off a second swarm, but your experience of a young queen piping in the broad daylight is novel. You say, 'she was traversing the comb like a mature bee.' We think she ran about challenging any probable unhatched queen, and had she received a response would have made for the queen-cell to tear it open. Young queens seem ready for business much sooner than workers. This summer we *assisted* several young queens out of their cells and put them together at once under a tumbler, one queen killing two rivals in less than ten minutes from their first appearance into daylight. 'Had there been a mature queen in the hive' it is probable she would have prevented the young queen you speak of coming forth. As to the production of the sound of piping, you are in error in saying Mr. Cheshire does not allude to it in his book, see p. 156, Vol. II.; and if you read a paper on the 'Vocal Organs of Bees,' p. 34, Vol. XV., *B. B. J.*, and the Editorial remarks, p. 561, Vol. XV., you will, perhaps, agree with Mr. Landois and ourselves, that such tones

are produced by the vocal apparatus (spiracles and wings) the natural complement of the auditory organs bees are known to possess.

M. GREEN.—*Doubtful Queen.*—If the eggs you saw eventually hatch and are capped over on a level with the surrounding comb then the queen is fertile, if on the other hand the cappings project like domes then she is a drone-breeder.

H. W. HOWLAND.—*Foul Brood.*—The largest piece of comb is very badly infected. Can you put the bees on to fresh comb *at once*; if not you will lose them? Burn old combs and feed on phenolated syrup quickly. The smaller piece is not quite so bad.

J. T. T.—1. *Sugar.*—Both No. 1 and No. 2 appear good sugars, but impress on your grocer you must have *pure cane* sugar only. 2. *Salicylic Acid.*—No. 2 has the better appearance.

W.—*Suspicious Comb.*—This is chilled brood only.

J. H. P.—*Foul Brood.*—Feed with phenolated syrup as detailed in last *B. B. J.*

E. C. PRESSLAND.—*Queenless Colonies.*—Such a strange disappearance of every queen from your seven stocks would be inexplicable. We should very much doubt the correctness of the conclusions you have arrived at as to condition (queenless) of your colonies. At this season of the year, and having so little stores, queens have ceased breeding, but where colonies have been fed breeding is still going on. No doubt you overlooked the queens: they more easily escaping your notice from the fact of your being under the impression at time of examination that they were not present.

E. BOGNOR.—1. *Transferring.*—The season being now far advanced, and the weather unpropitious, it would be desirable to defer the transferring to the spring; then let the stock swarm, and twenty-one days after the the operation of transferring and straightening the combs may take place. 2. *Sugar.*—Crushed sugar does not resemble granulated in appearance. Granulated is that which is indicated by the word, being in the form of granules. Crushed sugar is, however, suitable for making syrup.

INEXPERIENCED.—*Missing Queens.*—It is very possible that all the queens of the condemned bees have been killed; but it is desirable that you should have ocular demonstration of this. If such should be the case, a new queen should be provided, or mite.

C. H.—In a fair season, with good surroundings, with the best hives and advanced management, with the experience of a practical bee-keeper, and with the requisite time to devote to the superintendence of your bees, we consider that the average of each of your hives should reach 100 lbs. But with the high position you occupy in the bee-keeping world—as the hon. secretary of an important district, and as the promoter of a Bee Company—we submit, without any affectation of humility, that your ability to reply to your own question is far superior to ours, the more especially as we admit but little knowledge of your locality.

Capt. C. The report of the Surrey B.K.A. has not come to hand. A few replies are postponed to next issue.

Business Directory.

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ABBOTT BROS., Southall, and Merchants' Quay, Dublin
APPLETON, H. M., 256a Hotwell Road, Bristol.
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BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BURTT, E. J., Stroud Road, Gloucester.
EDEY & SON, St. Neots.
GODMAN, A., St. Albans.
HOWARD, J. H., Holme, Peterborough.
HUTCHINOS, A. F., St. Mary Cray, Kent.
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MEADOWS, W. P., Syston, Leicester.
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Editorial, Notices, &c.

REV. L. L. LANGSTROTH.

It was not our intention to recur to the Langstroth Fund, or to the circumstances which originated it, except in due time to report on the amount of subscriptions received, and their transference to the promoters of the Fund in America; but having just received from Mr. Thomas B. Reynolds, of Dayton, O., a photograph of the Rev. L. L. Langstroth, we have a sincere pleasure in directing to it the attention, not only of those who have subscribed to the Fund, but also of those who have made the acquaintance of the reverend gentleman through his most fascinating and instructive book, *The Hive and the Honey Bee*. The photograph is a full-length, cabinet size, and gives a good idea of the general appearance and intelligent countenance of one who still retains so many admirers and friends in both hemispheres. It gives us much pleasure to note that, though long past the allotted threescore years and ten, and though for many years he has passed through much physical suffering, he continues to look so hearty and well, and it would appear as if many years were still in prospect before 'the grand old man' is called away from our midst. The name of the Rev. L. L. Langstroth has for so many years been 'a household word' with bee-keepers, that we feel assured that many will feel inclined to indulge in the enjoyment of being able to look into that calm, intelligent, and benevolent face which is now presented to them.

We feel a spirit of gratitude pervading our hearts that we have been permitted to look, as it were, upon his living presence. Our memory passes back to that sentence which well-nigh thirty years ago he penned: 'Debarred to a great extent by ill-health from the appropriate duties of my profession, and compelled to seek an employment calling me as much as possible into the open air, I cherish the hope that my labours in an important department of Rural Economy may prove serviceable to the community.' Truly, whatever loss there may have been to his fellow-men in his inability to follow his high and holy calling, there has been a clear, and a great, and an abiding gain to the bee-keeping world; and we are ready to subscribe to that which his friend, the Rev. Dr. Robert Baird, said of him: 'He well deserves the name of Benefactor:—infinitely more so than many who in all countries and in all ages have received that honourable title.' And how feelingly Mr. Langstroth directs the attention of those of his own profession to the study of the economy of the honey bee: 'The attention of Ministers of the Gospel is particularly invited to this branch of Natural History. An intimate acquaintance with the Bee-Hive, while beneficial to them in many ways, might lead them in their preaching to imitate more closely the example of Him who illustrated His teachings by "the birds of the air, and the lilies of the field," as well as the common walks of life and the busy pursuits of men.'

The 'old man eloquent' is still with us, and his voice is ever and anon heard in the exercise of his sacred calling. It was but a very short time since—only a few months ago—that this good man visited Mr. James Heddon, of Dowagiac, Mich. Mr. Heddon says: 'Nearing eighty years of age, and not in the enjoyment of very robust physical health, I was astonished to find his mental powers as young and vigorous as those of a man of middle age.' On this occasion he preached in the Congregational Church, and Mr. Heddon proceeds to say: 'I think I may safely say that many years have passed away since our city has been honoured with such beneficent and well-delivered sermons. His voice is round, full, and melodious, fully equal to four times the capacity of any church in the city.' We can only breathe a hope that one whom bee-keepers have learned to love and reverence may long be spared to us.

Our advertisement columns will inform our readers how they may become possessors of the photograph of this friend of bee-keepers. Half of the cost of the photograph will go to increase the Langstroth Fund—a fund which we trust will be found sufficient to assist in providing for the necessities of the declining years of one whom all bee-keepers will long continue to hold in loving memory, not only as an apicultural inventor, or the author of the *Hive and the Honey Bee*, but also as one who has furnished us with a living and pleasant link with our American brethren.

VISIT OF MR. T. B. BLOW TO AMERICA.

Mr. T. B. Blow, of Welwyn, Herts, has long since desired to visit the bee-men of America. He has taken passage in the S. S. 'City of Rome,' which left Liverpool on the 19th. He will proceed direct through to Watertown, Wisconsin, where he has some business to transact with Messrs. Lewis & Co. Afterwards he proposes visiting Mr. D. A. Jones at Toronto, Canada, and as many of the principal bee-men of the United States as express a desire to be visited by him. His knowledge of the bees of Europe and the East, gained by personal visits to the habitats of these races, should make a visit from him desirable by most of our enterprising friends of America.

USEFUL HINT.

Robbing.—With the greatest possible emphasis we say, *Beware of robbing.* Filling up feeders should be done in the evening, and the feeders should be carefully covered. Sacks, or any old material, will do. Where large feeders and rapid feeding are used, it is most necessary to prevent the scent of the food escaping, and in this time of starvation bees are especially prone to robbing. Wasps also are getting very troublesome, and worry the bees. Entrances must be contracted, and great care must be taken that not a drop of syrup is spilled about the hives, and let there be no leakage from the feeders. If we get a month's fine, bright weather (as we all hope we may) robbing during rapid feeding will be a source of great danger.

A HINT FROM RUSSIA.

A new departure in girls' schools is being tried in Russia, countenanced and aided by the State. A lady has opened in a village near Kief a school where girls of the lower classes will be instructed in such branches of *petite culture* as women can profitably attend to, from market-gardening to bee-keeping. The school is to receive a yearly grant in aid of 1500 roubles. 'Rural School Boards in England,' says the *St. James's Gazette*, 'might perhaps take the idea into serious consideration. The wives and mothers of a future generation of British husbandmen would probably find a practical knowledge of dairy-farming and poultry-keeping even more useful than the arts and sciences they are now encouraged, if not required, to study.'—*The Schoolmaster, August 11th.*

[To this we would add *bee-keeping.*—Ed.]

BOKHARA CLOVER.

My friend and neighbour, Mr. Hatherley Wood, has called my attention to a bee plant, which has not been noticed, I believe, in the columns of the *Bee Journal* for many years—I mean, Bokhara Clover. The seeds of this particular kind of clover were given him by a friend who brought them from America—he thinks they came from the United States. The plant is, in his opinion, particularly valuable as a cover (or covert?) for game of all kinds if care is taken not to sow the seeds too closely. It provides good covert in winter with its dry stalks as well as in summer, for it is well known that some kind of game are very partial to dry stalks when seeking concealment.

Sown in March or April, the plant rises the first year to the height of five or six feet, but does not bloom to any extent until the second year, when it grows, in good ground, to ten feet and upwards. The bloom this year did not appear until August, but July is the usual month, and the bloom is said to last for several weeks. The flowers of the clover grown by my friend are white, but, curiously enough, there is one plant at some distance from the others which has spikes of yellow flowers. The seeds, Mr. Wood tells me, have ripened from below rather than from above. One very valuable feature about this clover is that rabbits will not attack it.

Mr. William Carr gives an interesting account of this plant in the *Bee Journal* of May 1st, 1877. He calls it the yellow and white Bokhara clover (*Melilotus Leucantha* and *M. albus altisonus*); but in Miller's *Dictionary of English Names of Plants* (Murray, 1884) we have as follows: '*Melilotus alba*, Bokhara clover, Cabul clover, white Melilot; *Melilotus leucantha*, Bokhara clover.' Mr. Carr adds the following details: 'Bees collect honey from this plant of a beautiful light colour and fine flavour. The tap roots of this plant go to a great depth in the earth, so it is well adapted for barren hills, steep hill-sides, and broken ground generally, as they can well withstand a drought. The plant, after flowering, seeds and dies. There are about 1800 seeds in one ounce.' Mr. Cowan informs me that the seed could easily be obtained from Denmark, but no doubt there is a good supply already in England. I may add that, to my mind, it hardly seems worth while to plant Bokhara (or Cabul) clover, where the space is limited; but when there is ample room, and cover for game is an object, as well as food of the finest quality for bees, then this very handsome plant should not be forgotten.—E. Bartrum, D.D., *Wakes Colne Rectory, Essex.*

A REPORT OF SOME EXPERIMENTS IN APICULTURE.

To the Commissioners of Agriculture.

By N. W. M'Lain.

The study of some forms of disease to which bees are subject, including an inquiry into the causes of disease and the discovery and application of suitable remedies, has occupied much time, and the results from this line of investigation have been, in a good degree, successful and satisfactory.

The excellent classification and complete history which have been given of the micro-parasitical forms which affect the life and health of bees simplify diagnosis and facilitate the discovery and application of preventives and cures. Modern science has shown that it is often necessary to unlearn much of what was supposed to have passed beyond the region of doubt. The subject in hand furnishes no exception. It is not strange that there should be confusion and error in dealing with the origin and habits of these micro-organisms which baffle the skill of the investigator. We are now collecting and tabulating data, and testing theories in the crucible of experience; and while our investigations are incomplete, and many seemingly determined facts lack full confirmation, and while significant manifestations await interpretation, we must be slow in reaching conclusions. We may indeed be in the region of the knowledge we seek after, but we must hold the evidence under survey until many-sided experience fully determines its value.

Bacillus Alvei (Cheshire).

This disease, commonly, but inappropriately, called foul brood, is indigenous in all parts of the United States, and is infectious and virulent to the last degree. Concerning the origin of *Bacillus* and other allied or-

ganisms, but little is certainly known, but that the organism classified as *Bacillus alvei* is the active agent in the destruction of both bees and brood is certain, for this agent is always present, and although its action in the living organism is exceeding complicated it is also well defined.

The symptoms of this disease may be more clearly described by contrasting the appearance of bees, brood, and combs in a healthy colony with the diagnostic symptoms attending *Bacillus alvei*. The bees act as if discontented and discouraged; the combs commonly present a dingy, neglected, and untidy appearance, and a characteristic odour is present, sometimes not noticeable until the hive-cover is removed, at other times offensive at some distance from the hive. This odour is very like that emitted from glue which has been prepared for use, then put aside and allowed to ferment. Instead of the plump, white, smooth appearance common to healthy uncapped larvæ, the membranes, more or less wrinkled and shrunken, are streaked with yellow, which, with the succeeding stages of the disease, changes into a dingy, grey brown; then, as putrefaction follows, the colour becomes a dirty red brown. As evaporation progresses the mass settles to the lower side of the cell, and if the head of a pin be drawn through the mass, that which adheres appears quite stringy and elastic, the trachcæ and tougher tissues resisting decay adhering to the cell. Later, nothing remains but a black, flat scale on the lower side near the bottom of the cell. If the disease does not assume the acute form before the pupa stage the brood is capped over, but the cell cap, commonly of a darker colour than that covering a healthy brood, settles, leaving the cover concave instead of flat or convex; and shortly small holes appear, as if inquiry had been instituted to learn the condition of the occupant, or to liberate the gases and odour and facilitate evaporation. Torn and ragged cell-caps are frequent, and some cells may be empty and cleansed; and in the midst of ragged and sunken caps a live bee may occasionally emerge.

The means by which these deadly agents are commonly introduced into the hive and into the bodies of their victims has not been certainly determined. Prof. Frank R. Cheshire, F.L.S., F.R.M.S., to whom we are indebted for the classification of this species of *Bacillus*, and also for much that is valuable concerning its life, history, and pathogenic character, speaking of the means of propagating this disease, says (see *Bees and Bee-keeping*, vol. ii. pp. 157, 158. London, 1888):—

'My strong opinion is, that, commonly, neither honey nor pollen carry the disease, but that the feet and antennæ of the bees usually do. It is also extremely likely that spores are carried in the air and taken in by the indraft set up by the fanners. There will be no difficulty in this supposition when it is remembered that the organisms are so minute that a cubic inch of material would form a quadruple line of them from London to New York.'

My own experience and observation is in agreement with this last proposition, as witness the following paragraph from my report of last year (see *Report of U. S. Entomologist*, 1886, p. 587):—

'That the contagion may sometimes be borne from hive to hive by the wind appears to be true, as it was observed in one of the apiaries which I treated for this disease during the past summer, that of a large number of diseased colonies in the apiary, with the exception of two colonies, all were located to the north-east of the colony in which the disease first appeared. The prevailing wind had been from the south-west.'

Mr. Cheshire says further (page as above):—'The bee-keeper is, unfortunately, almost compelled to become himself a probable cause of infection. His hands, made adhesive by propolis, carry the spores of bacilli, and so may transfer them even hours later, to healthy hives. The clothes should be kept, as far as practicable, from contact with suffering colonies, and the hands, after manipulating them, should be disinfected by washing with a weak solution of mercuric chloride (corrosive sublimate), one-eighth of an ounce in one gallon of water being quite strong enough.'

The concluding paragraph under this heading in my report for 1886 is as follows:—

'That the disease germs may be carried upon the clothing and hands appears probable, from the fact that in one neighbourhood this disease appeared in only two apiaries, the owners of which had spent some time working among diseased colonies at some distance from home; while other apiarists in that locality, who had kept away from the contagion, had no trouble from foul brood.'

It has been the common belief that honey is the medium through which the disease is most frequently introduced, from both near at hand and remote sources of infection. That undue importance has been attached to honey as the common source of infection appears certain, for I have proved by repeated trials that if frames containing combs of capped honey, and having no cells containing pollen, be removed from infected hives and thoroughly sprayed or immersed, using an acid and alkaline solution of suitable strength to destroy the germs exposed to its action, the honey in such combs did not communicate disease when placed in healthy colonies and consumed by the bees as food for both summer and winter uses. I have found it altogether practicable to feed honey which had been extracted from the infested combs without boiling, always adding, however, as a precaution, a disinfectant suitable to destroy any infection possibly lurking in such food.

In speaking of honey as a means of carrying this contagion, Mr. Cheshire says:—'I have searched most carefully in honey in contiguity with cells holding dead larvæ; have examined samples from stocks dying out with rottenness; inspected extracted honey from terribly diseased colonies; and yet in no instance have I found an active *bacillus*, and never have been able to be sure of discovering one in the spore condition, although it must be admitted that the problem has its microscopic difficulties, because the stains used to make the bacilli apparent attach themselves very strongly to all pollen grains and parts thereof, and somewhat interfere with examination. I have now discovered that it is impossible for bacilli to multiply in honey, because they cannot grow in any fluid having an acid reaction.'

As to pollen being the medium by which this contagion is commonly introduced into the hive, not wishing to appear as speaking *ex cathedrâ*, I venture to say that further experiments in the line indicated in my report of last year leave little room to doubt the accuracy of the opinion then formed, namely, that pollen is the medium by which this contagion is most commonly introduced, and most rapidly spread and persistently perpetuated. Continued observation showed that in those colonies where the largest quantity of pollen was being gathered the disease quickly assumed the malignant form, even when the quantity of brood was not greater than that being reared in other colonies where but little pollen was being gathered, and in which the disease was far less virulent; and in this latter kind, when little pollen was being gathered, the contagion yielded most readily to treatment. But what seemed more ready to the point was, that from those colonies from which the combs containing pollen were removed, and a suitable substitute furnished in the hive, thus avoiding the necessity for bringing supplies from the fields, the disorder was cured, and the colony speedily regained their normal condition.

The fact that queen larvæ seldom die from this contagion, taken in connexion with what we know to be true concerning the character of their food, is significant namely, that it is wholly composed of digested material

pollen grains being rarely found therein, and then as if present by accident and not by design, seems to justify the conclusion that the absence of pollen accounts for the absence of bacilli; while, on the contrary, the food of worker larvæ, secreted in excessive quantity and deposited in haste, occasional grains of pollen being dropped, and no reason for their removal existing, the bacilli, finding congenial cultures, multiply apace; and if, perchance, the larvæ escape infection, as is commonly the case until near the time of weaning, then live pollen being supplied, speedy and complete ruin results. Moreover, few, if any bacilli, are to be found in the chyle stomach of an adult queen at the head of a stricken colony, subsisted as she must be, almost entirely upon secreted food produced by the worker bees; while in the chyle stomach of the worker, which partakes freely of pollen, they are present in quantity, and, in fact, line the whole intestinal tract.

The evidence presented in support of this pollen theory of the means of introducing and spreading this contagion is circumstantial, still it is component; and if it fails to reveal the true source of infection, the fact that the consumption of such live pollen as is obtained from the fields during the prevalence of this disease, or such old pollen as is stored in cells in which it may have moulded or rotted, and become a possible source of infection, aggravates the disease and makes it more persistent; and the fact that if the old pollen be removed from the hive, and artificial pollen be substituted, the malignant and persistent characteristics disappear, and that the contagion then readily yields to suitable treatment, is settled beyond question.

While it is true that queen-bees have less to fear from infection in the larval stage, it is also true that queens reared in infested colonies are commonly worthless. Of twenty-five queens so reared in one apiary, and successfully established at the head of as many colonies, not one survived the period of hibernation. In case the contagion does not assume the acute form in the larvæ, it may localise and become chronic, and so, the bacillus of disease being as unnatural as disease itself, both worker and queen may live on for weeks and months, and the queen, with both life and death within her, transmitting the possibilities of both. Mr. Cheshire has counted as many as nine bacilli in a single egg, a discovery full of significance when striving to account for the spread of the disease. It is but natural that this contagion, being a disease of the blood, should find congenial and luxuriant feeding-ground among the most delicate and highly-organized glands and tubes of the ovaries.

We reason thus:—The bee-pap furnished to the queen larvæ, the protoplastic egg-food, copiously furnished to the queen during the breeding season, is continuous, and passes from cell to cell. The germ cell of bacillus contributed to the organisms of the queen in larval or in egg-food, borne along through the digestive and circulatory system, passes within the ovarian tubes, and from thence into the nascent egg-cell; and once within the yolk is ready to contend for supremacy against the spermatozoid soon to be introduced. But the strife is unequal, and instead of the differentiating principle determining the form, function, and instinct of a new creature appointed to long life and service, the bacillus, finding the environment suited to multiplication, sterilises the blood and riddles the tissues and viscera.

The remedy which I have found to be a specific—by the use of which I have cured hundreds of cases, many of which seemed hopelessly incurable, without failure, and without a return of the contagion, except in the case of two colonies of black bees, where the disease reappeared in a form so mild that each colony was speedily cured, each one casting a swarm, and storing a fair amount of surplus honey—is prepared and applied substantially as directed in my last annual report.

In three pints of warm soft water dissolve one pint o dairy salt. Add one pint of water, boiling hot, in which have been dissolved four tablespoonfuls of bi-carbonate of soda. Dissolve quarter of an ounce of pure salicylic acid (the crystal) in one ounce of alcohol. Add this to the salt and soda mixture, then raise the temperature near to the boiling point, and stir thoroughly while adding honey or syrup sufficient to make the mixture quite sweet, but not enough to perceptibly thicken, and leave standing for two or three hours, when it is ready for use. An earthen vessel is best. I have tried other acids and alkalies in other forms, but the remedy prepared as directed and applied warmth is that which I prefer.

Treatment of Bacillus Alvei.

Upon removing the cover from the hive, thoroughly dampen the tops of the frames, and as many bees as are exposed by blowing a copious spray of the mixture from a large atomiser. Beginning with the outside, lift a frame from the hive and throw a copious spray over the adhering bees on both sides of the comb, shake off part of the bees into the hive, and spray those remaining; then shake and brush these into the hive; then blow a copious spray of the warm mixture over and into the cells on both sides of the combs sufficient to perceptibly dampen both comb and frame. In like manner treat all the frames, *seriatim*, returning them to the hive in order. From combs containing very much pollen, the honey should be extracted and the combs melted into wax. This extracted honey may be fed with safety, two and a half ounces of the remedy being added and well stirred into each quart of water.

All the colonies in the apiary should be given a thorough spraying the first time the treatment is applied, but combs containing pollen need not be removed from healthy colonies. After the first thorough treatment the comb and bees should be thoroughly sprayed with the remedy at intervals of two or three days until cured. Three treatments after the first thorough application are commonly sufficient; first one frame being lifted from the hive and sprayed, and the others simply set apart, so that the spray may be well directed over and copiously applied to both bees and combs. An essential feature in my method of treatment, which I failed to make duly significant and prominent in my last annual report, is that medicated honey or sugar syrup should be continuously fed to all infected colonies while they are convalescing, for not only must the contagion be driven from the organism of the adult bee, and suitable food and tonic given to aid in repairing the ravages of disease, but a constant and even supply of the remedy serves as a preventive and cure for the diseased larvæ.

The honey or syrup should be fed warm, and two ounces of the remedy should be well mixed in each quart of food, which may be given in feeders, or by pouring over and into empty combs, and placing these in the hive.

To prevent the bees from going abroad for supplies, make a thin paste of rye flour and bone flour, three parts of the former to one of the latter, adding the medicated honey or syrup. Spread this over a small area of old comb and honey in the hive, or feed in shallow pans or wooden butter dishes in the top of the hive or outside in the apiary, under shelter from rain. I prepare the bone flour by burining dry bones to a white ash. The softest and whitest pieces I grind to dust in a mortar, and sift through a very fine sieve made of fine wire-strainer cloth. The coarser pieces of burned bone I put in open vessels with lumps of rock salt, which I keep half covered with sweetened water, and sheltered from the rain, at all times accessible to the bees. The rapidity with which depleted colonies recuperate and become populous is surprising. I have tried supplying the saline, alkaline, and phosphate elements in bee-food by using boracic acid, phosphoric acid, &c., but I find that

the bees take kindly to the supplies prepared as I have directed, and the amount consumed shows their appreciation and need. Such supplies of food and drink should be kept at all times in the apiary, easy of access. I have not found disinfecting of the hives necessary further than to simply dampen the inside with a copious spray of the remedy, and sometimes no care was taken to do even this.—*American Bee Journal.*

ASSOCIATIONS.

BRITISH BEE-KEEPERS' ASSOCIATION.

Meeting of Committee held at 105 Jermyn Street on Thursday, the 13th inst. Present, T. W. Cowan (in the chair), Rev. G. Raynor, Rev. Dr. Bartrum, Captain Campbell, Captain Bush, Rev. R. Errington, Rev. J. L. Seager, and the Secretary. Letters were read from the Rev. F. T. Scott, the Hon. and Rev. H. Bligh, and the Rev. F. S. Sclater, regretting their inability to be present.

The minutes of the last committee meeting were read and confirmed. The report of the Finance Committee having been considered, the Chairman reported that a meeting of the Exhibitions Sub-committee had been held that day. The accounts relating to the Nottingham Exhibition had been approved and passed, and the prize list for the exhibition to be held at Windsor next year had been considered but not completed. Resolved 'That the sub-committee be requested to further consider the Windsor schedule in time for consideration at the next meeting.'

The Secretary reported that after conferring with the Chairman he had communicated with the Royal Agricultural Society, soliciting their co-operation in the proposal to extend the bee department at Windsor next year, to which the R. A. S. had replied to the effect that they would be glad to consider the proposals of the British Bee-keepers' Association at their Council Meeting in November next.

A letter was read requesting that the Association now being formed for South Gloucestershire and North Somerset might be taken into affiliation with the Central Association. After some discussion it was resolved that the County Associations Sub-committee be requested to consider and report upon the whole question of affiliation of local societies.

SURREY BEE-KEEPERS' ASSOCIATION.

This Association held its tenth annual show on the 5th and 6th of September, in conjunction with the Frimley, York Town, and Camberley Horticultural Society's Show, in the grounds of the Governor of the Royal Military College. The weather was most fortunately fine and pleasant, and a good attendance made the show a success, though the exhibition of honey was necessarily very small on account of the unfavourable season; but as the Committee took this into consideration, and invited small exhibits with a view to encourage cottagers to compete for the prizes, there were some fair samples of extracted honey, as well as a few really excellent 1-lb. sections, which were much admired and found a ready sale.

Mr. Webster of Binfield had a well-selected exhibit in the large tent of hives and appliances, including his improved new 'swarm-catching cage,' which attracted much notice. In this class a novel hive was exhibited by Mr. George Smith, of Bexley Heath, Kent, being a modification of the 'Eastern Cylinder Hive,' with circular frames and provision for supering above, and in which, the inventor stated, the bees worked well for the last three years. This hive excited much curiosity, but did not appear to be regarded as an improvement on the standard bar-frame hive, and did not obtain favourable notice by the judge (the Rev. F. S. Sclater, of Dropmore Vicarage, Maidenhead).

The exhibition tent was thronged by the public, especially on the second day of the show, as also was the bee tent of the Association, in which lectures were frequently given during the afternoons by the Honorary Secretary (Captain Campbell), and also by Mr. Webster, the former gentleman acting as expert.

A good exhibit of stocks of bees in bar-frame and other hives, including an observatory hive well stocked with bees and fine white comb, which attracted much attention. The public thronged round the bee tent till the last moment of closing and showed the greatest interest in the manipulations and descriptions of mode of extracting honey and natural history of the honey bee, illustrated by the Association diagrams.

An examination for third-grade experts was also held by the Rev. F. S. Sclater during the show.

The following is a list of the prize takers:—

Class A.—For best observatory hive with stock of bees: S. W. Goodall, 1*l.*

Class B.—Best stock of bees in bar-frame hive: 1, A. H. Miller, 15*s.* (cottager); 2, S. W. Goodall (cottager).

Class C.—Best stock of bees in skep: 1, A. Osborne (cottager); 2, H. Wilt (cottager).

Class D.—Best honey in comb, 1-lb. sections: 1, Levi Inwood, silver medal; 2, M. F. H. Lemare, 10*s.* 6*d.* and certificate; 3, W. Woodley, 7*s.* 6*d.* and S. B. K. A. certificate.

Class E.—Best honey in sections or super (cottagers and members only): 1, A. H. Miller, bronze medal; 2, E. Rose, 7*s.* 6*d.* and Cowan's *Bee-keepers' Guide*; 3, S. T. Denyer, S. B. K. certificate and smoker.

Class F.—Best honey in sections (cottagers only, not members): 1, H. Wilt, 7*s.* 6*d.*; 2, F. K. Spalding, 5*s.*

Class G.—Best run or extracted honey (cottagers only): 1, T. Chater, 7*s.* 6*d.*; 2, A. Miller, 5*s.*; 3, C. Rose, Surrey B. K. A. certificate.

Class H.—Best honey in glass bottles (cottagers, not members): 1, F. Spalding, 5*s.*

Class I.—Best honey in 1-lb. bottles (not cottagers); 1, W. Woodley, 12*s.* 6*d.*; 2, Levi Inwood, 7*s.* 6*d.*

Class K.—Best show of appliances: Mr. W. B. Webster, 1*l.*; 2, (not awarded).

IRISH BEE-KEEPERS' ASSOCIATION.

A large number of sections and bottles of honey are now exhibited by the above Association at the Irish Exhibition in London. Prizes were awarded on the 12th inst. for the best contributions to this exhibit as follows:—

Class I. For the best 12 1-lb. sections, 1st and 2nd prizes, 15*s.* and 10*s.*, Miss M. Daly. Special prize, 10*s.*, Miss E. E. Rutherfoord. Highly commended, Mr. Oswald Hardy.

Class II. For the best 12 1-lb. bottles, 1st and 2nd prizes, 15*s.* and 10*s.*, Miss M. Daly. 3rd prize, 7*s.* 6*d.*, Miss F. W. Currey. Highly commended (for each of two entries), Mr. Thomas Elderkin.

Mr. Cowan, Chairman of the British Bee-keepers' Association, and Mr. W. Raitt, of Blairgowrie, kindly gave their services as judges.

An unfortunate accident prevented the honey of Mr. George Turner, Revlin House, Donegal, from being placed before the judges.

NORTH-EAST OF IRELAND BEE-KEEPERS' SHOW.

As no report of the N. E. I. Bee-keepers' Show at which I was asked to judge in Belfast on the 17th August, has appeared in the *B. B. J.*, I think it may interest some of your readers if I send you a short account of it, though it may be considered scarcely within my province to do so.

Of necessity the amount of honey staged was not

large, but I may say that the quality of nearly all that appeared was excellent. There was more than one exhibit of sections which would have merited a prize at the Royal, while in the classes for extracted honey there were many samples which it would be difficult to surpass either in delicacy of flavour or aroma or in the condition and manner in which they were prepared for exhibition.

Amongst the hives, there were many good ones, but none to my mind first-rate. In those shown by Mr. Abbott it appeared that utility had been somewhat sacrificed to cheapness—a fault due rather to the demand for cheap hives than to any fault on the part of the maker. Those shown by the local makers were excellent of their kind, but somewhat behind the standard of the best English manufacturers, from whom I think our Irish friends might with advantage take some hints. Unfortunately as I was not asked to judge in this department, I did not feel myself at liberty to make any criticisms, or, as I should much have liked to have done, point out to the makers what I considered their defects.

There were some excellent collections of appliances (for which no prize was offered) in which I observed the visitors to the Show took the keenest interest, asking about the merits and uses of each article in a manner which showed the value of such exhibitions, in gaining the attention of the general public, as well as the instruction of bee-keepers. There were some very strong stocks of bees exhibited in observatory hives of various patterns, but none of them of any foreign breed.

The arrangements of the Show were in every way very good and reflected the greatest credit upon Mr. Paul McHenry, the Hon. Sec., Mr. Sam Cunningham, the Hon. Treasurer, and other gentlemen, who threw themselves most heartily into the work. The cordial reception and friendly hospitality shown me by the bee-keepers and their friends in Ireland, is to me but one more proof how 'one touch of nature makes the whole world kin,' and raises a hope that even bee-keeping, in its humble way, may do something towards removing the misunderstandings that exist, and strengthening the sympathy that ought to exist, between the good people of the Emerald Isle and those of our own country.—J. Lingen Seager.

The judges were as follows:—Hives and appliances—Rev. J. Balfour Robertson, Leswalt, Stranraer: Archibald Morris, Rosetta Avenue, Ballynafeigh. Bees and honey—Rev. J. L. Seager, The Grange, Stevenage.

The following is the prize list:—

For the best stock or specimen of any variety of bees, with their queen—1, Rev. James Hunt; 2, William Lonsdale; 3, J. Gilliland, jun. For the best super of comb honey, not being sectional, the super to be of wood, straw, or of wood in combination with glass or straw—1, J. McCabe; 2, William Lonsdale. For the best twelve 1-lb. sections of comb honey, confined to the members of the Association—1, J. J. McCabe; 2, E. W. Lockhart; 3, George Porter. For the best twelve 1-lb. or six 2-lb. glass jars of uncongealed or liquid extracted or run honey—1, E. W. Lockhart; 2, Alex. Turkington; 3, S. Kevan. For the best twelve 1-lb. or six 2-lb. glass jars of congealed, extracted, or run honey—1, E. W. Lockhart. For the best twelve 1-lb. or six 2-lb. glass jars for extracted or run honey—1, E. W. Lockhart; 2, W. Morrow; 3, E. Morgan. For the best ornamental design in comb honey—1, W. Lonsdale. For the best exhibit of beeswax, being produce of exhibitor's own bees (confined to members of the Association)—1, E. W. Lockhart; 2, W. Lonsdale. For the best bar-frame hive, with facilities for harvesting honey and wintering bees, complete with cover and stand—1, W. Lonsdale; 2, W. Henry. For the best and most complete bar-frame hive, with facilities for harvesting honey and wintering bees, price not to exceed 10s.—1, W. Henry; 2, E. Morgan; 3, Abbott Bros. For the best and cheapest straw hive, with most simple and efficient adaptation for crate of sections complete, with floor and cover—1, W. Lonsdale; 2, A. Cross Bryce & Co. For the best two crates of sections capable of being tiered, complete, with foundation, separators, &c., price not to exceed 3s. 6d. each— 1 and 2, Abbott Bros.; 3, W. Morrow. For the best six 2-lb. glass jars of extracted or run honey, with honey labels affixed with name of apiary—George Turner.

HORTICULTURAL SHOW AT YARNTON.

August 28th.

One of the chief features of this show was the bee department. Mr. H. Cobb, of Dorchester, gave lectures on the modern system of bee-keeping in connexion with the Oxfordshire Bee-keepers' Association. Mr. Cobb (who judged the honey) gave his audience some useful and valuable information in regard to the management of skeps, and also showed some specimens of the modern bar-frame hives. The present season is a very bad one, and rather discouraging for beginners in the keeping of bees, although the honey, considering the season, has been rather good. Messrs. Turner and Sons, of Woodstock Road, had a small tent in the grounds, and showed a selection of improved bar-frame hives and other bee-keepers' appliances generally. Messrs. Gill and Co., ironmongers, of this city, also exhibited one or two appliances of a similar kind.

The bee-driving competition was watched with much interest. The first prize was given by George Herbert Morrell, Esq., and the second by the Oxfordshire Bee-keepers' Association. There were three competitors, namely, Mr. Henry Edgington, of Cassington, Mr. Axtell, of Yarnton, and Lizzie Anstey, aged eleven years, of Oxford. The first prize was taken by Lizzie Anstey, who drove the bees out in twelve minutes and found the queen a minute later; Edgington was second, driving the bees in thirteen minutes and detecting the queen three and a half minutes later; Axtell took fifteen minutes to drive the bees, and did not succeed in finding the queen. There was a bad light, and neither of the competitors succeeded in finding the queen whilst the bees were travelling from the skep, so that the bees had to be shaken on a table and the queen picked out as they were running in the hive.

Mr. Henry Edgington received the prize, a bar-frame hive, offered by the Oxfordshire B. K. A., and Mrs. Pitt a super-crate for skep.

A Young Man residing near Ettrick, Wis., while hunting early this month, saw a swarm of passing bees, and fired his gun at them. At once they settled on him, stinging him so badly that he died within an hour. Hunters should not attempt to interfere with a passing swarm of bees. If numbers count, especially when all are armed, it is an unequal contest, especially when the hunter was not posted as to the means of defending himself by creating a smoke. As hunters have no mercy on harmless and innocent birds and animals, they cannot complain when their merciless attacks meet with a vigorous response.—*American Bee Journal.*

How to Destroy Wasps.—About four or five feet from the wasps' nest rear a brush pile by gathering up all the old brush lying around, which ought to be consumed by fire anyhow. Select a dark night. In the first place ignite your brush pile and let it get a good start before you excite the inmates. Interim, procure a brace of base-ball bats or clubs, and beat the terra firma where the nest is. This racket on the outside will soon bring up the inquisitive little fellows, which, peering into the terrible darkness, will discern the light-giving fire, and without more ado into it will dart and be cremated—yes, stinger and all, for the whole includes the part. Keep on pounding until you trow they are nearly all out, when the nest should (if convenient) be dug up and twirled into the fire so as to avoid any ripe-capped, yellow-jacket brood from espying the glowing eye of day.—*American Bee Journal.*

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

WANTED: SOME ONE TO BEAR THE BLAME OF YELLOW BANDS IN CARNIOLA.

[1802.] I had intended replying to the editorial remarks on the existence of yellow bands among Carniolans, but having been very busy, the matter was postponed. Meanwhile an extract from a private letter, written by me bearing somewhat on this point, was published in the *American Bee Journal*, and from that copied by the *British Bee Journal*. But as Mr. 'Amateur Expert' could not let the matter rest there after my plain statements regarding the existence of yellow-banded bees in Carniola, but must needs exhibit his ignorance of the whole subject in the *Journal* for September 6th, it may be well to tell him what he might long ago have easily learned had he taken the matter seriously in hand —what, had he known when penning his last 'Jottings,' he would probably not have had the effrontery to heap upon me the blame, if such it be, for the existence of yellow-banded Carniolans.

Upon the occasion of my first visit to Carniola, which occurred in 1880, yellow-banded bees were in existence here quite as plentiful, for aught I could see, as now. I had just come from America, and left all my yellow bees (Italians) behind me in my native State. I had never then had Cyprians in my possession. In the spring of 1883 I made my second visit to Carniola. The yellow bees I brought from the Orient, then to Europe, were not brought into the Province of Carniola at all, but were left in Trieste to fly while I secured a quantity of Carniolan queens and stocks. The same yellow bands were visible occasionally in both Upper and Lower Carniola. During this year (1883) I sold an imported Cyprian queen and an imported Syrian to Mr. M. Ambrozic, which I have been told he kept apart from his other bees, and this week he told me himself he did not keep these races any more.

In 1882, while in Cyprus, I received from one F. J. Dokoupil, then living in Northern Austria, an order for a Cyprian queen. The latter was sent, but was reported dead upon arrival, and as I guaranteed safe arrival, no payment was made for this queen, and a second queen was not sent. I have since received accurate and trustworthy information to the effect that when, a year or two after the date last mentioned, Mr. Dokoupil moved from Moravia to Carniola, he brought with him a hive of bees which he represented as the progeny of an imported Cyprian queen obtained from me. I am, therefore, in doubt as to whether the honour (?), if Mr. 'Amateur Expert' would call it such, of having first brought Cyprian bees to Carniola belongs to Mr. F. J. Dokoupil or Mr. M. Ambrozic. The latter, however, brought the first Syrians into the province. In 1885 I sent fifteen Cyprians and Syrians direct from the Orient to Mr. Dokoupil. Three of these were reported dead; and the plan of reporting queens dead upon arrival worked so well that when 1886 came round, out of twenty-nine Eastern queens sent direct to this party in Carniola, some twenty-four were reported dead. But the report was sent months after the queens were received, and trustworthy information obtained here this year placed the number of dead queens at but one or two!

The reader will kindly bear in mind that, up to the date mentioned, I had never resided in Carniola, nor had I brought any yellow bees to the Province; but I had obtained Carniolan queens from all the dealers in bees here who were known as such. These dealers were widely separated, and except the two above mentioned none had introduced any yellow blood. Only in the spring of 1887 did I locate here in Carniola, and in announcing this change from Munich to Laibach I made the following statement in the circulars then issued:—'I have established an apiary at Laibach, near the centre of the Province of Carniola, for the production principally of choice Carniolan queens. Only pure Carniolan bees exist in Laibach and the region about, and none but choice Carniolan drones will be allowed in my own apiary.' During this season and last season some foreign queens (yellow) have been brought here and introduced to rest up until they might be packed for journeys to distant countries, but the production of any drones but Carniolans has been closely prevented. None of these queens have been lost here by swarming out, or any similar mishap; and when any of their daughters have been reared, it has been only to secure their fertilisation by *Carniolan* drones for purposes of experiment, or to fill special orders. Only a limited number of such queens have been handled, and the utmost pains have been taken to keep track of each and every one and her doings until she left Carniola; and *I positively assert, and with a clear conscience, too, that not one drop of yellow* (Cyprian, Syrian, Palestine, or Italian) *blood has gotten into any Carniolans bred here, or about here, from my apiary or through me,* nor have I any knowledge of the introduction of foreign races by others about me. 'Room for bungling work,' perhaps 'A. E.' would say. This I would readily admit if certain of the so-called experts ('first-class,' too) that hold forth in England were at the helm down this way! As it is, I do not believe the old boat will luff up on me, nor do I fear that Mr. 'Amateur Expert' will take the wind out of my sails.

Be it then well understood that yellow bands existed among Carniolan bees in Carniola before I ever crossed the Atlantic; and if previous to my coming here Mr. 'Amateur Expert' never saw them, it is very likely because mere chance had not thrown such a stock among the tinker's half-dozen upon which 'Amateur Expert' had made his extensive observations. And bearing this in mind, the reader will readily see that it is as absurd as unjust for 'Amateur Expert,' Mr. Raitt, or any one else to heap upon me the opprobrium of the introduction of yellow bands into Carniola. There is in my mind no doubt but that this peculiarity has existed for many decades, and I venture even to say for centuries. I have visited many apiaries here in Carniola, and talked with bee-raisers from all parts of the Province, and they agree that yellow bands exist, and have existed, here as far back as they can remember. Mr. Ambrozic told me personally but three days since that yellow-banded Carniolans exist in his portion of the Province, and but recently a bee-keeper said to me, 'his father, who died many years since, recommended yellow-banded bees as the best strain.' I did not come here to make over the Carniolan race, nor to improve it by crossing, nor have I ever even remotely hinted that such was my plan. On the other hand, I did distinctly state that it was my intention to rear pure Carniolans, and to this I have adhered strictly.

I have never knowingly concealed or misrepresented the qualities or peculiarities of any race of bees about which I have written; indeed, this very matter of yellow bands was mentioned by me more than a year before I came here to engage in queen-rearing, as can be seen by reference to the leaflet, *Bees*, for January 20th, 1886, where the following was printed:—'In all parts

of Carniola some queens are found which produce bees having the first segment of the abdomen somewhat rusty-red in colour, and they are as often seen among the finest, most prolific queens as among those of any other grade.' The article referred to was copied by many periodicals, including both the *British Bee Journal* and the *Record*, while the *Canadian Bee Journal* did me the honour, I believe, of printing it *twice!* so that if 'Amateur Expert' has not read the above quotation before, he shows himself lamentably ignorant of what has been said on a subject concerning which he takes the liberty of criticising.

The readers of the *British Bee Journal* can see by looking back a few numbers that when an editorial brought up this matter of yellow bands among Carnilans, Mr. Thos. B. Blow immediately feels a load upon his shoulders, and tries to dump it off at once by informing the Editor that he (Mr. Blow) 'has had a hundred stocks of bees from Carniola, none of which showed bees with yellow bands.' Now be it known that this same Mr. Blow, who condemns all Eastern bees roundly (never having learned how to manipulate them), and who expostulates in 1885 with Dokoupil for introducing and keeping Cyprian, Syrian, and Italian races, has, according to trustworthy information in my possession, been purchasing largely Carniolans from Dokoupil himself, so that the hope recently expressed by the Editor of the *B.B.J.* that Dokoupil had not sent his queens to England is vain. The truth is Mr. Dokoupil has sent but *few* queens to American, not having been able to land there alive more than a very small percentage of those sent. He has exported largely to England, and states in his printed circular (upon which I do not rely) for 1888 that he furnished Mr. Blow 160 Carniolan queens in the autumn of 1887, and Mr. Blow is claimed to have expressed his satisfaction with these queens. Furthermore, I do know to a certainty that the said T. B. Blow has introduced into England more *second quality* Carniolans than any other English dealer.

Another slash at 'Amateur Expert,' and I will wipe my—pen, and calmly lay it away. This gentleman becomes absurd again when he says, 'The Italians were not ruined in temper till Cyprians were taken to Italy to improve the colour of the gentlest bee then known.' Without troubling to look up the exact date when Carniolans became known, I can assure Mr. 'A. E.' that it was previous to 1878, so that 'Italians were not the gentlest bee then known.' It was, I believe, in 1878 that Sartori brought Cyprians (doubtful if pure) from Austria to Milan. In 1884 I supplied him with Syrian stock to use in breeding. Fiorini went to Cyprus and got eight stocks of bees in December 1879, and since then I have twice filled orders from him for Cyprians. During repeated journeys in Italy I have failed to discover, outside of these two apiaries, any traces of Cyprian blood. I do not think the sales of these two parties have been large; in fact, I don't believe their sales of bees have been anything at home, and so it is safe to say that, unfortunate as it may be, Italian bees are practically the same as they were ten years ago throughout the peninsula, and Mr. 'Amateur Expert's' Cyprian bugbear in Italy is chiefly in his own imagination. FRANK BENTON, *Laibach, Carniola, Austria, September 13th.*

[Mr. Blow is by this time on his way to America. We doubt not that when he has the opportunity, he will be able to maintain the quality of the queens imported by him.—ED.]

MEMS BY 'WOODLEIGH.'

[1803.] The past season is, without doubt, the most disastrous bee-keepers working on the modern frame-hive system have known, and those who have embarked in the 'cult' largely will have to do a lot of feeding to carry their bees through the coming winter, entailing expense besides a great deal of extra labour from which no return can be looked for for the next nine months. Yet, even taking things in their worst aspect, we have something to be thankful for, and that is, the low price of feeding stuffs. I am buying a good, clean, light-coloured Demerara, crystallised and warranted pure cane sugar, at 20s. per cwt. delivered, and it makes an excellent syrup with half a pint of rain-water to the pound. I am also adding a little salicylic acid in homœopathic proportions, but *no vinegar*. I have not used any vinegar in my syrups for several years, either for spring or autumn feeding, and have never had a case of re-crystallisation of food in the combs.

In going through my rather extensive apiary, I found many of the hives honeyless, while others (the minority) had a fair supply, and in a very few instances sufficient stores to carry them through the winter, notably two stocks, one that has worked most sections for the season (twenty), and another that worked two small bell-glasses (supers) side by side, weighing seven and five pounds respectively. One is on the angular and the other the parallel system. Now, the colony that worked the sections, and has food enough for the winter, was some driven bees I had offered me late last season, and rather than they should be destroyed, I drove them the last week in October, or first week in November, I forget which. There were four lots, and I made two colonies of them, putting them in a makeshift hive on three frames each, with six sections of honey tied into another frame for each compartment, making four frames for each colony, dividing them with a thin division-board, so that each colony contributed to the mutual warmth and well-being of its neighbours on the other side of the thin septum. I gave them a dozen sections of honey (none of the best, of course) between them, so that they should not have to do syrup-storing so late in the season. Both came through the winter well, and as soon as practicable in the spring I transferred both lots into some new hives, giving extra combs as required, and both stocks now form A1 colonies, and likely to give a good account of themselves in the good time coming.

PRICE OF HONEY.—I hope soon to see quotations of the price current of honey in our weekly organ. If a supply of the 'new' farthing post-cards are sent to the principal honey producers, salesmen, and honey merchants, asking them individually to fill up with their prices current for the week up till Saturday—not necessarily for individual names or even initials to appear—but to give 'The Sage' a consensus of the general price, so that he may evolve a record of the price of our commodity in each issue. Then in a year or two's time we could get two or more columns giving the prices in the corresponding seasons in 1889 or 1890. If the idea can be carried into effect, and I do not see any insuperable difficulties in the way, I feel sure it would be a great boon and help generally to bee-keepers to be able to refer to their *Journal* as an authority in the matter.

PUTTING UP HONEY FOR MARKET.—It may seem a repetition to refer to this subject, but I feel that the manner in which honey is prepared for the market has a great influence on the purchaser, either wholesale or retail, and consequently an enhanced price is obtained for a saleable article by the producer, and that is the reason I refer to the subject again. Cleanliness is of the first importance in all edible productions, especially in honey. Thus, in the first place, carefully remove all propolis and little odd pieces of wax, with which bees are apt to fill up all interstices. For this purpose I find a strong table-knife the handiest tool, supplemented with a pen-knife for the interior corners of the sections to be used, where the broad blade of the strong knife would damage the combs.

GLAZING SECTIONS.—After sections are nicely scraped they will require some protection before they reach the

table of the consumer, and during the past few years many devices (*vide* the advertising pages of *B. B. J.*) have been brought out for protecting sections of comb honey. Some, I admit, are very neat and well adapted for the purpose. The only fault one can find in them has been the price, which ranges from 1½*d.* to 2½*d.* each, including railway carriage. Now this extra cost has to be borne either by the producer of honey, or else by the consumer of it, and anything that enhances the price of a commodity must act as a deterrent to the sale of the same; that is an axiom in trade which no one can gainsay, and, acting on that proposition, I have always endeavoured to go the cheapest way to work in placing my honey on the market, though at the same time I infer from the many encomiums I have received from large purchasers of section honey that my style of preparing it for the market is one of the best, if it is not the *ne plus ultra*, in the matter. Now, for the system that is at once cheap, neat, and effective. Get your squares of glass cut $4\frac{3}{16} \times 4\frac{3}{16}$, and strips of white paper ⅜ inch wide, to attach the square each side of the section, using thin glue or size for the job. Why glue instead of paste? Because the glue fills the pores in the paper and forms an impervious sealing, in fact, if well done, the sections are for all practical purposes hermetically sealed. The paper should only cover the front edges of the sections about a quarter of an inch, and should be put on square, that is, showing the same width edge all round. Now if you go to the best market and buy your glass in large quantities, and the 'gude wife,' as in my case, does the glazing, it will not cost more than a halfpenny each section. I may add, my wife is an adept at the job, having glazed ten to twelve dozen in a day, when large orders have come in, but not this season, I am sorry to say.—WOODLEIGH.

[The price of honey is regulated by the law of supply and demand, and differs much in different localities. Up to the present time we have not found it possible to furnish reliable quotations.—ED.]

THE BATTLE OF THE BEES.

[1804.] Doubtless there are many thousands of your ordinary readers who would be keenly interested in watching the progress of a real bee-battle—an attack by some, or all, the bees of one hive on the occupants of another hive, with the wicked intention of pilfering the honey which the industry of the hive attacked has gathered. Such an attack actually took place yesterday in my garden, and for the space of quite an hour I had an opportunity of observing the savageness and determination with which these intensely interesting creatures fight. The first intimation I had of the disturbance was a very loud buzzing and humming in the neighbourhood of my smallest and weakest hive. On going near the hive I at once saw what was the real state of affairs. A detachment of bees from a neighbour's hive were storming my own with very great determination. Some were fighting in the air, and others were endeavouring to effect an entrance into the hive itself, but, so far as I could judge, were being gallantly repulsed, for many bees dropped dead at the entrance. Meanwhile I had thought of a plan to render the position of the defenders more secure. At the entrance to the hive I placed a piece of perforated zinc, with holes sufficiently large to admit of only one bee at a time to pass through. This doubtless relieved them, and those that had effected an entrance would have the warmest possible time of it. But reinforcements were continually arriving for the attacking army, and the position of my bees outside the hive was becoming more and more desperate. Eventually they were all killed or driven away; perhaps some regained the hive, but very many were dead and dying on the ground. Many of the enemy of course were amongst the number, and the remainder took to their wings and disappeared. On going to the hive this morning I counted twenty-four dead bees being carried out by the survivors. These were either my own bees who had died of their wounds, or, which is very probable, they were those of the enemy who had gained an entrance. Some time must elapse before they will settle down to work again, for they are greatly excited, and do not leave the immediate vicinity of the hive. Doubtless these splendid creatures are apprehensive of another attack on their storehouse, and act accordingly. Their wonderful sagacity in selecting for attack the weakest hive, and the unerring instinct which enables them to discriminate between friend and foe, place these insects amongst the most wonderful of God's creatures, whether we consider their industry, their forethought, or their observance of the laws which regulate and govern the working of each individual hive.—H. J., *Carlton, Worksop, Notts., Sept.* 13 (*'Daily News'*).

LATE SWARMS.

[1805.] To-day (Sept. 15th) I hived a swarm weighing about 1½ lbs. that came from a skep on the previous day, and hung on the branch of a plum-tree high up in a thick hedge all night, and being a fairly warm night they (the bees) did not appear to suffer from the exposure. The man to whom they belonged is one of the old-fashioned skeppists; and as he thought they would be of no use to him, he came round to me just as I was having breakfast, and I went with him as soon as I had finished and had them in the skep by 7.45 a.m. They are the ordinary blacks, and were not in the best of skin through shaking the tree with the ladder. There was also a swarm from a skep, belonging to a farmer within about half a mile of the above, on the 6th inst.; and within three miles of Edenbridge Station (S.E.R.) I think these two natural swarms are the latest on record. Out of seventeen stocks in skeps that I lifted round about here, only one had more than half a pound of honey, and that particular one had 3 lbs. bare. It looks very bad for next year, and feeding is out of the question with the 'ancients.' They say it don't pay, and they cannot be convinced otherwise; but grumble and feed is the advice given by—IDIOT.

[Could not our correspondent select a more appropriate *nom de plume*?—ED.]

BEE FLOWERS.

[1806.] Perhaps 'Amateur Expert' would kindly give, through your columns where the seed of 'Echinops Globosa,' 'Canada Thistle,' or 'Chapman's Honey Plant,' may be had, also as to cultivation, time to sow, &c.? 'Nepeta Mussini' has also been spoken of as a good honey-producing plant. Some readers of the *B. B. J.* will, perhaps, kindly say where it is to be had and how cultivated.

I enclose a few spikes of flowers and foliage from what was sold me as 'Bokhara Clover' when I asked for the 'Melilotus Leucantha;' it is a stalwart grower, eight to ten feet, profuse bloomer (but not till second year), and greatly beloved of the bees. Some seedling plants of 'Milotus Alibi,' American clover, greatly resemble it in foliage; but the inflorescence of the 'Bokhara' is not like our ideas of a clover, as it is more in racemes or spikes. There would seem to be a yellow as well as a white variety, of both of which I send you a specimen.

Though this has been a hard year on bee-keepers' generally, there have been exceptions. I have got from one hive, 'storified,' fifty-seven complete sections and no swarm; but on May 25th, the bees were crowded on ten frames. A lady bee-keeper, a neighbour of mine, has had 160 complete sections from three hives; but the forage here is good—sycamore, fruit blossom, lime, white clover, and blackberry.—APIS HIBERNICUS.

PERCENTAGES, SWARMS, AND WINTER PASSAGES.

[1807.] I have had a long experience in bee-keeping. For the last three years I have had the management of thirteen hives (ten bar-frames, three skeps), and during that time I have not had a single swarm from any of the bar-frame hives. I gave them plenty of room and whole sheets of foundation in doubling boxes, but on no occasion did the bees ever seem inclined to swarm. Of course it would be possible for them to have swarmed unknown to me, but I had a man regularly at work in the garden near the hives all through the season, and he would certainly have noticed the swarming had it taken place.

As to winter passages, I think the bees do quite as well without as with them. I have four hives in which no winter passages were made, and these four hives have wintered quite safely during the last two years. In fact, I have but lost one frame-hive out of ten since 1885, and in that case the bees died from want of food, and not from the absence of winter passages.

I have also come to the conclusion that if the bees have a sufficient store of food in single-walled hives of one-inch wood, they will winter quite as well as in hives with double walls and winter packing.—R. S., *Tamworth Agricultural College*.

HOOKER'S WINTER MANAGEMENT (1784).

[1808.] It is always more pleasant to answer any question from a person who gives his name in full than one bearing initials, as one is then better able to judge the object of the same. I have, however, endeavoured to do as asked. The quilts or coverings I use consist of a piece of unbleached calico, washed free from dressing, then on this several thicknesses of house-flannel, pieces of old blankets, carpets, or felt. I do not use an impervious material in winter.

A dry hive containing plenty of food is essential to successful wintering. To keep the hive dry it is desirable to raise the back of it for the purpose of letting out condensation, if any, to allow any water from driving rain or melted snow to run out, and *not in*.

'A. B.' no doubt keeps his bees '*under a proper system of management*,' and does not require any caution about keeping his hive dry or his floor-board and entrance clear of dead and stinking bees from me. My advice was intended for less experienced bee-keepers, and, I think if followed, will be found useful. To my mind the entrance should be as wide open as possible, and the top of the hive covered up very warm with quilts and a crate of chaff, so that the ventilation through the top of the hive will be very gentle, and not likely to lower the temperature, although not absolutely impervious, and if frames of comb are end on to the entrance we need not fear mouldy combs.—JOHN M. HOOKER.

THREE WAYS OF WORKING FOR COMB HONEY.

[1809.] The usual mode of working for comb honey is what is known as the 'tiering-up system,' and without doubt there are more who use this system than there are of those who use all other systems combined; yet this does not certainly make it true that this plan is the best one there is, by any means. It often happens that the majority are not in the right, and so, after I had proven to my entire satisfaction that there was a better plan to work on in rai-ing comb honey than the tiering-up system, I forsook the same and turned my attention to other plans. My chief objection to the tiering-up plan was, that not so much honey could be obtained by using it, and, worse than all the rest, if the utmost care was not used, the result would be lots of unfinished sections in the fall. These unfinished sections have been an 'eye-sore' to all the users of this plan, as the immediate past will testify, for many are so disgusted with them that they recommend that they be burnt up, while a whole issue of one of our bee-periodicals is used in telling how to save them by way of feeding back extracted honey in order to get them filled.

The next system most in use is what is termed the 'side and top storing plan combined,' which I adopted upon leaving the tiering-up plan. By the use of this plan more honey can be obtained than by any other plan I know of, except by using the lateral plan, of which I shall soon speak. The trouble with the side and top storing plan was, that it required much work; yet, as I go over the results of the past while using it, I am convinced that the extra amount of honey obtained by the use of it more than paid me for all the extra work the plan required over the tiering-up plan. An average yield of over 80 lbs. of comb honey per colony for a period of fifteen years is a record never attained by any of the advocates of that plan. A few years ago D. A. Jones came out with a wholly side-storing plan, the young brood to be kept in the centre of the hive by means of perforated zinc, while the sections were to be placed between that and the older brood, which was to be kept on the outside. One trial of this proved, so far as I was concerned, that the plan was fallacious; and although he told us he would explain, some years ago, I have never seen a word from him on the subject since, hence I have not enumerated this in the above three plans at all. While working with the side and top storing plan, I left a passage-way under the side-boxes, so that any bees which might be scattered around over the top and sides of the hive after any manipulation could get back to the cluster instead of dying there, as is the case where no means of outlet is provided. This caused many to write me, asking if I meant to have this so; 'for,' said they, 'the bees will go around under these side-boxes up into the cap over them, and build comb there, which they fill with honey.' I told them that this was as I wanted it, giving the reasons for so leaving it, and telling them if any colony so persisted in doing, to give more room by adding sections at the side. Well, I often got caught in this same fix myself when I would be a little tardy in keeping up with the bees, so that I have often had from five to fifteen pounds of honey built in the cap of the hive, the bees having to travel from twenty-five to thirty inches entirely away from the brood to get there. This leaving the brood and storing honey in such amounts in the cap led me to adopt what I term the 'lateral plan' of obtaining section honey, which plan gives me fully as much honey as could be obtained by the side and top box plan, with as little work as is required when using the tiering-up plan. The larger part of my hives are of the kind known as the 'chaff hive,' which gives plenty of room on top for all the room required by the largest colony without tiering up. Over the top of these hives I have placed a queen-excluding honey-board, the queen-excluding part going over only the brood-apartment to the hive, the rest being a thin board to cover up the chaff. When the honey season arrives, this is put on (quilts being used, together with sawdust cushions, up to this time), and from three to five wide frames, holding four 1¼-lb. sections each, are placed directly over the brood. As soon as these are well occupied with bees at work, I add one or two wide frames at each side; and when these are occupied, I add enough more to cover the top of the hive if so much room is needed. In this way I accommodate the size of the colony with the needed room, neither giving too much nor too little, as must of necessity occur where the T super, and others of a set capacity, are used. As soon as the first that were put on are filled, they are taken off (handling by the wide frame only, so five pounds are handled instead of single

boxes), when the partly filled sections at each side are slid along on the honey-board till they come together in the centre, when the empty ones are placed at the sides. As the honey season draws to a close, no more empty sections are put on, so that, when the season is over, I often have but one or two wide frames of sections on the hive, thus doing away with more partly filled sections than I really need for bait sections the following season.

In the above, all will see that I have all the advantages of both the former plans combined, and that so as to work to the very best possible advantage. Well, just as I had this all wrought out, and have worked it to my entire satisfaction (often using the whole complement of wide frames over but five Gallup frames below), for the past two seasons, what should friends Root and Miller do but upset the whole thing? Now, gentlemen, in all candour I ask, Did either one of you ever fully test the matter you are there talking about, or have you reasoned it out in theory, and told us that such and such would be the facts? If you have fully tested the matter, please tell me how it came about that my bees will thus work to advantage, and would go even two feet or more entirely away from the brood, and there work apparently as well as anywhere.—G. M. Doolittle, *Borodino, N.Y.* (*Gleanings.*)

NOTES FROM CUMBERLAND.

[1810.] In order to report myself to the many friends whom I recently met in the International Exhibition, Glasgow, I have much pleasure in stating that on the 5th of September I visited the grounds of the Emmerdale Bee Farm, where 166 hives were located from different parts of Cumberland, and at a little further distance about 140 were also laid out amongst the beautiful patches of heather growing luxuriantly on the rugged cliffs and tall, towering hills which surround this beautiful lake.

Around the district of Harrington there are only a few bee-keepers, and some of their hives are in fair keeping condition; others I have advised to attend to feeding at once: as a rule surplus honey is not to be expected. I have never had the misfortune of seeing so many bees destroying themselves amongst the jam-pots and barrels at the back of our stores; it is evident some hives are being seriously injured, as no doubt other places will be also visited. Altogether, from what I have seen, both at Emmerdale and here, it is evident honey will be very scarce this season. And some of the hives will require the greatest attention, as there seems a tendency to leave the old skeps to fight it out for themselves; the little favourable is far from sufficient to warrant one trusting too much this season to abundant keeping stores.

I noticed several of the hives were for sale at Emmerdale. I hope this is not the result of any one losing heart. Bee-keeping has difficulties to contend with like other hobbies, and patience and care now will undoubtedly be well repaid in the future.—Ebenezer McNally, *Co-operative Society, Harrington.*

A VOICE FROM KILLARNEY.

[1811.] In this locality we have three seasons in which surplus honey is stored, viz., from the maples, from 7th to 20th May; from white clover (one great source of supply, generally speaking), from 10th to 25th July; and from the limes, which commence about 20th July and end about 1st August. Last season I secured on an average about 15 lbs. of honey per colony from the maples on sections from the previous year partly filled out. This year the bees stored 6 lbs. per hive under similar conditions. On looking back, however, for a few years, I find the average from the same source to be 10 lbs. each hive, and this with stocks on which stimulation had scarcely been begun. Now, I want to know whether it would not be more advantageous to begin to stimulate in time to get a larger surplus from this first honey flow? and, *especially*, whether having got the queen to lay so early, she would be able to keep the colony sufficiently strong until the 1st August to meet the other two honey flows?

I may add that I have got only 8 lbs. per hive this year, the lowest during my experience, and the greater part of the sections so badly filled that I could not offer them for sale, while a great many were only about half filled. It is the weather, and not the poor bees, that is at fault, as the following figures will show:—

Month.	Mean temperature at 9 a.m. in		Rain-fall (inches).		No. of days in which rain fell.	
	1887.	1888.	1887.	1888.	1887.	1888.
June	62·8	17·5	·604	3·16	7	16
July...	64·6	56·6	·01	5·13	3	23
August	57·1	57·9	1·100	3·10	24	20

'Feeding Back.'

On 6th August I took off all the sections, and returned forty-two nearly sealed to two of my strongest hives, thinking the bees would finish them off. They did 'finish them off' in the most approved style, as in three days afterwards, when I examined them, they had taken down every drop of honey into the body of the hives. I had not done brooding over this freak when your *B.B.J.* came to hand in which you had copied an article from the *American Bee Journal*, giving directions as to what should have been done under similar circumstances—'*too late*.'

What Bees will (or will not) do.

From the experiences of a friend I was not *quite* unprepared for this trick played on me by the bees. In August, 1887, the gentleman I refer to left, for some reason not necessary to explain here, the sections on three of his hives until late in November, when he went to remove them he found that the bees had (as might be expected) taken down all the honey from the sections in two hives, but when he went to the third he found that they had brought every drop of honey from the body of the hive up into the sections! What have you got to say to that Mr. Editor, and Mr. 'Amateur Expert,' and all other amateurs and experts in bee-knowledge? There is a nut to crack for you.

Have Bees a 'Memory?'

In the summer of 1885 my bees selected a very convenient watering-place—an eave-shoot in a 'lean-to,' about six feet from the ground. Up to that time I had a good deal of bother in trying to provide water for them, and was so glad to find them avail themselves of this ready-made trough that whenever I found it running dry I refilled it, first stopping the down-pipe. They continued to use it up to the time they ceased flying in November. I naturally expected that when they began to fly again the following spring they would return to their old 'tap;' but no! and until within the last couple of months I have not seen a bee use the shoot to drink from, although I have frequently put pieces of comb, &c., about it to get them to do so. Could the bees that went into winter quarters, say, in the end of November, have forgotten all about this eave-shoot about the 1st March, when they began flying again?

Last year I averaged sixty-seven saleable sections from each hive.—Mangerton, *Killarney, September*, 1888.

WINTER PASSAGES.

[1812.] It being almost time to think of putting things in order for the coming winter, could you, as this subject

will be doubtless interesting to many, get Mr. Simmins to give his opinion on the above subject, as I fail to see any reference to it in his new book?' And as he recommends the quilt to be carefully laid flat, he apparently does not use 'Hill's device.' Does he take it for granted winter passages are made? I see in the *Journal* for March 1887, Mr. Boyes calls these passages 'all moonshine.'—W. WILLIAMS.

Mr. Simmins' reply:—'My own opinion is the same as Mr. Boyes'. Have never found or seen the necessity of making them, and never shall all the time stores are properly arranged as late as September.—S. S.'

SHALLOW FRAMES.

[1813.] In answer to your correspondent 'Honeysuckle' (No. 1791), I give the dimensions of the shallow frames I use, which he will find very handy for extracting.

Top bars $1\frac{3}{4}$ inch wide, with $\frac{1}{4}$ inch space between, making 2 inches from centre to centre. I tack $\frac{1}{4}$ inch pieces on to keep the distance, the same as wide-shouldered frames, $\frac{3}{8}$ inch thick, $16\frac{1}{2}$ inches long; ends, $4 \times 1\frac{1}{2} \times \frac{1}{4}$ inches; bottom bar, $14 \times 1 \times \frac{3}{8}$ inches. In a fair season the queen will not lay in them. I use no excluder. The honey is equal to section honey, and two can be extracted in the place of one frame. I slightly groove top bar for end pieces to fit in. If care is taken in cutting a 9-inch board the ends and sides of lift can be made from it. I use dummies for convenience in removing, but they will do without. I have used them with great success on a Combination hive of 15 frames, and 2 tiers deep of shallow frames, 9 inches each lift. I once extracted the whole 18 at one time, and had them refilled and *sealed* in less than a fortnight, the best frame containing 4 lbs. of honey after extracted. But once, during a showery season, the queen laid eggs in the fifteen frames and in the centre of shallow frames through three tiers.

I first made shallow frames to hold the old four-piece nailed section before the one-piece was invented, as I did not know how to make a section rack, but discarded them from that use as soon as I did know how as useless, on account of the trouble of getting the sections out, and used the hanging crate and frames for extracting purposes, and when the B. B. K. A. decided on a standard frame, I made others of the above dimensions, the first being shorter.—ALPHA.

AN APOLOGY, &c.

[1814.] I beg to apologise for having questioned the correctness of Mr. Sims' statement respecting the amount of honey in one of his hives. He has not, it is true, told us what weight he has taken from this particular hive, but as he has not taken exception to my calculation (58 lbs.) as the probable weight in it, my calculation must have been near the mark. I congratulate him and his mentor, Mr. Gay, on the result. Mr. Sims doesn't offer any explanation as to where or when his bees got their honey, further than assuming that they got it, as suggested by Mr. Gibbins (1787) from the blackberry blossoms. Our Editor's opinion of the section sent him by Mr. Sims = 'the best we have tested this season' doesn't argue in favour of the Blackberry theory. Anyway, I have been under the impression that honey from the blackberry was somewhat inferior. I am open to enlightenment on the point. Nor can I agree with Mr. Gibbins in his contention that 'a strong hive, in first-class order, having very little young brood, might gather 58 lbs. of honey in six days' from the blackberry. Blackberries are so abundant throughout the county that bee-keepers have plenty of opportunities of proving or disproving Mr. Gibbins' statement. Will those who have had a surplus from this source acquaint us with their good fortune?

Mr. Gibbins has a delicious bit of logical reasoning in his letter. He says: 'Neither "East Glamorgan" nor Mr. Sims is known personally to me, but I would point out that Mr. Sims is a very well-known keeper of minor live stock, and as such is more likely to be correct than "E. G.," who, by not giving his real name to his fellow bee-keepers, prevents them from forming a proper value' (forming a value!) 'of his writings.' One man is a poultry-fancier, therefore more likely to be correct in bee-keeping matters than another man who writes under an assumed name! Mr. Sims also expresses the hope that 'E. G.' will, in future, give his name. We shall then perhaps be able to judge whether he knows anything about bee-keeping or not.' Wonderful! Mr. Editor, 'Useful Hints,' and 'Amateur Expert,' please sign future contributions with your proper names, 'we shall then be able to judge whether you know anything about bee-keeping or not.'

In order to satisfy Mr. Sims' curiosity, allow me to state that I *am* a very clever man (my wife will attest the truth of this, if needed), that the number of my stocks exceeds the number of his, and that the management of the same is better than it has been. I must tell him also that I did *not* say that Navigation was a poor place for honey-getting. I said that it was unlikely that his bees secured a surplus from the fruit blossoms, meaning the blossoms of the apple, plum, gooseberry, &c.

Mr. Gibbins expects that we shall find Mr. Sims a powerful competitor at the honey shows—the local ones, I presume. 'E. G.,' too, intends making a bid for some of the prizes, and it will afford him great pleasure to pocket them, as he is confident he will! and at the same time 'whip' Mr. Sims. Mr. Gibbins, I fear, is out of the running.—EAST GLAMORGAN, *September 17th.*

SEASON NOW DEPARTING.

(*With many apologies to Edgar Allan Poe.*)

Once upon a summer dreary, while I wandered dull and weary
Round my bee-farm in the gloaming, as I had often done before,
Through my troubled brain there floated visions of high prices gloated
I could make of sections noted, if my bees had such in store;
Yes, and also of extracted, if they had even that in store:
But they've combs, and nothing more.

Ah! distinctly I remember, it was only last September,
Hives with sweet ambrosial nectar nearly all were gushing o'er;
Busy bees so swiftly hieing, hive against hive grandly vieing,
Each and all were nobly trying to gather in the greatest store,
And beat precedental totals that were marked up in the store:
'That's gone by for evermore.'

Startled at the stillness broken by that sentence aptly spoken,
Craven heart, I said, 'tis fancy; cease thy doubting, I implore,
Place thy trust in bees and honey, thou shalt have both stocks and money
In abundance, such as thou hast never had before—
Weighty supers, help requiring to place safely in the store:
'Croak no more.'

But my memory kept returning to the question in it burning,
While instinctively I entered, entered in the empty store,
Where in other years I've mustered serried piles of sections clustered,
With extracting greatly flustered, in the happy times of yore.
Now the empty shelves seemed mocking all around the empty store:
'They never were so bare before.'

Tell us, greatest, best of 'Sages,' shall we ever in the ages
That are coming know such seasons any more?

Promptly came his answer to it, 'See thy work, then go and do it,
Or next June thou'll sadly rue it, when depleted stocks can't store
Of the abundant flowing nectar, never known in days of yore,
Cease thy croaking evermore!'

Thou bad season now departing, let young eighty-nine upstarting
Consign thy many failures to Oblivion's silent shore;
Leave our hives with inmates teeming, while we of sunny seasons dreaming
Feed with syrup erstwhile steaming, to eke out thy scanty store.
May we never see thy equal, is a blessing we implore,
Both for now and evermore.

WOODLEIGH.

A NOVEL HIVE.—For several days past the church clock at Harpenden, near Luton, has refused to work. On an inspection being made, it was found that a swarm of bees had taken up their abode among the works.

DEATH FROM THE STING OF A BEE.—Mr. William Barron, of English Street, Carlisle, was working in his garden, when a bee stung him. Death ensued from shock and exhaustion.—*The Echo, September 5.*

FAILURE OF THE HONEY CROP.—In consequence of the total failure of the honey crop in Herefordshire, the fair usually held at this time of year has been abandoned.—*The Daily Telegraph, September 8.*

SOLITARY WASPS AND BEES.—Of wild bees 1500 species were known, and of wasps 1100. The habits of almost every genus differed.

AN OLD QUEEN ANT.—Sir John Lubbock mentioned with regret the death of a queen ant which had lived in one of his nests since 1874, and must therefore have been fourteen years old.—*The Star, September 8.*

HIS TIME WASN'T WASTED.—'Hello, Jones! Been having a lark with your bees? Taken a lot of honey, I suppose.' JONES (*mournfully, his face swollen out of all shape*).—'No, I didn't get any honey, but (*brightening up*) I weeded out a lot of bad-tempered bees.'—*Reported by* HONEYSUCKLE.

One of the most amusing books I have ever met with is the *Book of Noodles*, published by Elliot Stock, Paternoster Row. Amongst the Gothamites and Pedants enumerated, is a 'cross-grained fellow who had some honey for sale, and a man coming up to him and inquiring the price, he upset the jar and then replied, 'You may shed your heart's blood like that before I tell such as you.'—*Contributed by* A. E.

DRONES.—One morning, a year or more ago, my little friend Max came in to see me; and as he walked across the room I noticed that he held both his hands behind him. As he approached my couch he explained, 'I've got something for you—just hear them sing!' and suddenly, before I realised what he was going to do, he was holding his hands up by my ears. And, oh, such a buzz, b-u-z-z, b-u-z-z-i-n-g as I heard! I felt as though a whole swarm of bees had surrounded me. Glancing up at him I saw his eyes were twinkling, and he was shaking with suppressed laughter as he watched my astonished countenance. 'O Max!' I said, 'are your hands full of bees, or what have you got in there? It sounds like a swarm of bees.' 'Just five bumble-bees,' he replied, 'but they can't hurt you, for they are nothing but drones.' 'But where did you get them, and how did you know they were "nothing but drones?"' I questioned. 'Why, 'cause I found them on that old dead tree in the lane,' he replied. 'But, Max,' said I, 'how could that tell you they were drones?' 'Ho!' he said, 'don't you know how to tell a drone? Why, I'll tell you how you can tell them every time. The workers are too busy to lounge around and do nothing; and when they alight it is always on something they can work on; and when you see bees sitting around on dead wood, with nothing to do, you may be sure they are old lazy drones. Why, I have caught dozens of them, and they are always drones. I never caught a worker that wasn't at work, or else looking out for a job.' 'Well, Max, that is a new idea to me,' I said; 'but if that is the case, the bees are very much like people; aren't they? For a man who spends his time sitting around on old store-boxes, and lounging about saloons, is generally a drone in the human hive. Our workers in the world haven't much time to waste, for they can always find plenty to do, and take pleasure in being useful.—*Gleanings.*

Echoes from the Hives.

Southampton, Sept. 10th.—My experience this year has been—no honey—(some 10 lbs. from one lot of twelve). *Full* sheets foundation in sections worse, even, than starters, being nearly all eaten through like a network. During first honey-flow, not an egg visible in the hives; bees evidently either destroying them or preventing queen depositing. Best nuclei I made by putting a small shovelful of a swarm on a frame of queen-cells. In *many* cases queen-cells contained useless grubs among their number.—H. S.

School House, Stratton, Swindon, September 17th, 1888.—The weather for a week past has been glorious. I transferred two skeps for a cottager on Wednesday. One had not a gram of honey, the other about ten pounds from last season, being a very large skep. One 'skeppist' near me has already lost nine stocks; several others one each. I could *not* prevail on them to feed. One of the knowing ones asked me yesterday if I would take an order for some honey, I said no! but I could extract him some syrup, which he declined with thanks. I hope to *finish* feeding in a few days, and to make all 'taut' for the winter at the end of the week. May I urge on all the importance of utilising this fine weather by feeding up *rapidly*? We have a great lot of blackberry blossom, but the bees do not seem doing any real work on it. I am now looking forward hopefully to season 1889, having made eighteen lots into fourteen all with young queens.—COLTRIP I. G. GILBERT.

NOTICES TO CORRESPONDENTS & INQUIRERS

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

H. S.—*Colony in Chimney.*—The colony in chimney can be removed as follows:—Place some brown paper or cotton rag in the fireplace communicating with chimney, and light same; this will subjugate the bees, the combs must then be removed and the bees brushed off into an empty skep. When this is done place the skep over mouth of chimney, that the flying bees may all collect with those in skep. Towards evening they can be removed, and can be united to cast. The three colonies must then be fed up to a weight of 25 lbs. If the cottager is too poor to pay for feed, cannot he sell two of the three colonies, and so provide funds for provisioning the third?

E. J. B. and BETA.—The pieces of comb forwarded were infected with foul brood.

J. T. T.—This is not a case of foul, but of chilled brood.

A. B. TYRO.—*Equalising.*—1. If you think that the bees you intend to transfer next spring have more honey than required for wintering—say above 20 lbs.—you may safely give the surplus to the colony now at the

heather. 2. When spring arrives, fine weather prevailing, about the middle of April, remove the outside combs, one by one, at intervals of a week or so, and add frames of foundation next the brood-nest.

WILFORD SHEPHERD.—*Feeding.*—Get a rapid feeder, and feed on thick syrup—10 lbs. sugar to 5 pints of water. Give the food *warm*, in the evening. A strong colony will store about fifteen quarts of this syrup—sufficient to carry it through the winter—in a couple of days. See the advice given on feeding in 'Useful Hints' of last issue (page 446). Dry sugar-feeding is merely supplementary. We do not advise it except on emergency. Syrup should be gently boiled about five minutes.

ROBERT WELFORD.—*American Enamel Cloth.*—You did not give sufficient ventilation during the winter. The entrances should be kept open at their full width. A space of from two to four inches should be provided beneath the frames, and the enamel cloth—glazed side downwards—should be covered with several pieces of felt, flannel, or soft woollen carpet. Cushions of chaff or cork dust may be placed on these. Winter only *strong colonies*, and you will find no dampness.

L. W. R.—*Condemned Bees.*—1. We always remove the supernumerary queens immediately before uniting.—2. The best time for driving in this month is when most of the bees have ceased working—say about 4 p.m.—3. Yes. Tie up the driven bees in skeps with coarse canvas, and unite on the evening of the day following.—4. No. Three driven colonies are not too many to put together. We do not recollect the locality of the apiary to which you refer.

C. W.—The granulated sugar forwarded will answer your purpose. You will find a difficulty in improving on it.

G. S. C.—You will find the sugar very suitable for syrup-making, but please adhere to the directions given in Cowan's *Guide Book*.

G. B. CLARKE.—*Robber Bees.*—The bees forwarded are affected with the disease to which has been given the name of *Bacillus depilis*, or *Gaytoni*. They have been driven from their own hive, and seek food and lodgment wherever they can obtain them.

J. R. L.—*Sections.*—Any with uncapped honey had better be used on the table. Sections should be stored in a dry place. *Robbing.*—Have you tried putting a handful of damp hay loosely over the porch? The bees inside can easily find their way out, and defend their stores better, while the robbers are nonplussed. Those bees now robbing will be dead by next spring: what their descendants may do we cannot say. If your bees are not strong in numbers, unite two colonies into one. Strong colonies, as a rule, are not troubled with robbers.

T. PARKER.—*Heather.*—The small pink flower is the plant for honey. *Feeding.*—You may reckon a standard frame well filled holds about 5 lbs. of food.

R. L. RICHARDSON.—1. *Sugars.*—These have not reached us, your letter not having been directed to the Editor according to instructions. 2. *Dead Queen.*—This arrived rather the worse of wear, but we are afraid it is your Carniolan queen. 3. *Shiny Bees.*—These are the old bees which, had they had to forage outside for food, would have perished ere this. We are not acquainted with Hawick.

R. AULD.—1. *Drawn-out Sections.*—Yes, if you can store them out carefully so that no wax-moth can get at them. The colour is a drawback, though. 2. *Division Boards.*—We like one on each side of brood nest.

W. M. B.—1. *Skep.*—Give a clean floor-board at once, and, if possible, brush round the bottom of the skep, 2. *Feeding.*—Give about 6 lbs. more at once, this will carry them up to March next.

J. H. WEST.—*Packing Stocks.*—We expect you will find no honey or brood in the lower storey, if so, remove the lower frames and put the frames with brood, &c., in their place. Extracted honey may be thinned with a little warm water according to its present density.

INQUIRER.—*Five Specimens of Comb.*—These were not affected with foul brood.

W. H. ADAMS.—This is not a case of foul brood. The brood appears not to have received sufficient attention for necessary development. It is possible that the prevalent wet season may have been the cause of it.

Business Directory.

HIVES AND OTHER APPLIANCES.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin
APPLETON, H. M., 256A Hotwell Road, Bristol.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BURTT, E. J., Strond Road, Gloucester.
EDEY & SON, St. Neots.
GODMAN, A., St. Albans.
HOWARD, J. H., Holme, Peterborough.
HUTCHINOS, A. F., St. Mary Cray, Kent.
MEADHAM, M., Huntington, Hereford.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.
WALTON, E. C., 82 Emmanuel Street, Preston.
WEBSTER, W. B., Binfield, Berks.
WOODLEY & FLOOD, 26 Donnington Road, Reading.
WREN & SON, 139 High Street, Lowestoft.

HONEY MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
BRITISH HONEY CO., Limited, 17 King William St., Strand.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BENTON, F., Laibach, Carniola, Austria.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
SIMMINS' Bee Company, Limtd., Rottingdean, near Brighton.

METAL ENDS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BAKER, W. B., Muskham, Newark.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
EDEY & SONS, St. Neots.
GODMAN, A., St. Albans.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BRITISH BEE-KEEPERS' STORES, 6 George Yard, Fenchurch St.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.

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Editorial, Notices, &c.

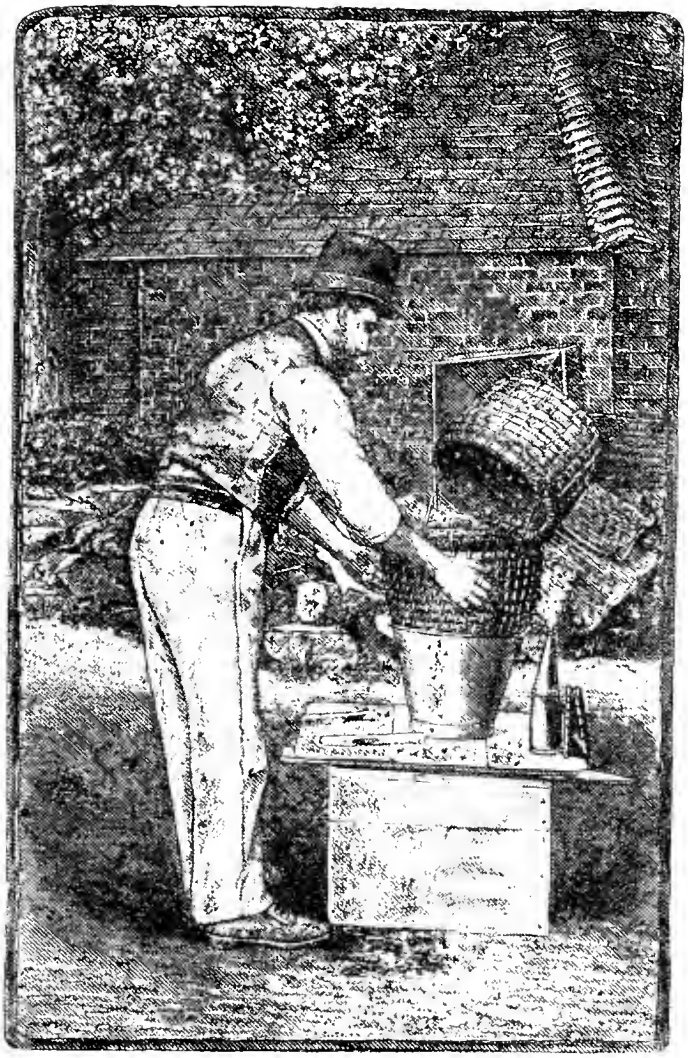
PRACTICAL WORK IN THE APIARY.

DRIVING BEES.

Owing to the poor honey yield this year there will be many more hives than usual marked by their owners for 'taking up,' and on account of their light weight will be condemned to be burned. The intelligent bee-keeper, if he cannot persuade his more ignorant neighbour to feed his bees and thus save their lives, will, perhaps, be able to induce him to allow them to be taken for him. Sometimes straw-skeppists are willing enough to do this, but if any demur we have generally found that the offer to take the bees and pay 6*d.* to 1*s.* for each skep, according to its strength, will usually be accepted. The bee-keeper will always find a use for any bees he may obtain late in the season, either for strengthening weak stocks or by uniting three or four lots and giving them frames of comb, a hive could be built out, by liberal feeding, so that it could pass the winter in safety. Small lots of bees are difficult to keep through the winter, and even if the bee-keeper succeed in wintering them, they dwindle so rapidly in the spring that it is a questionable policy to winter any but strong stocks. Having agreed to take the bees, there are two methods by which we can do so without damaging combs or bees. These are driving and bumping. If the skeps are full of bees we prefer driving; but if the combs are unfinished and there are few bees, bumping would be the quicker way. This season many hives will be found with uncompleted combs; and a few days ago we examined six straw skeps, five of which contained from four to five unfinished combs and very few bees. Driving such hives would be useless, as the combs being this season's would be very brittle, and so few bees would with difficulty be induced to ascend.

The requisites for driving are few, viz.: an empty skep, a skewer, a couple of wires about 8 inches long, bent thus ⌐¯¯¯

A few will run over the sides, and these can be driven back with smoke, carefully tapping the hive with the tips of the fingers to avoid crushing them. In a minute or two a loud buzz will give notice that a start in earnest is about to be made, and the crowd of bees make a rush up the side into the empty skep, apparently eager to escape from their trembling combs. Keep a sharp look-out for the queen, as she may generally be seen ascending with the others, and she should be caught and placed in a cage or box until wanted. The rapping should not be applied too near the rim, as this causes the bees to be shaken down again after they have taken the trouble to get to the top. Any clusters refusing to move can always be dispersed by a puff of smoke. In from ten to twenty minutes, according to the weather and the strength of the population, all the bees may be driven out. We have alluded to smoke in driving, but carbolic acid can be used just as well for intimidating the bees. With a goose-quill introduce some of the solution at the entrance, and in lifting up the hive get the carbolic cloth over the hive. The bees can be driven away from any part of the hive by applying the quill to that part where they are clustered.



In chilly weather, and when honey is scarce, bees are much more difficult to drive. This difficulty, however, is easily overcome if, after we lift up the hive, we pour over the comb about a quarter of a pint of warm syrup, throw a cheese-cloth over the mouth of the hive, and give the bees ten to fifteen minutes for licking it up. The excitement consequent upon this proceeding raises the temperature and facilitates driving. When all the bees are driven out, the skep containing the driven bees should be placed on the stand the original hive occupied, so that it may collect all the straggling bees. The queen may then be returned to the bees by allowing her to run in at the entrance. If, however, we wish to join these bees to some of our own stocks in frame-hives, we keep the queen in the cage for further use if we should require her, as we should not need her with the bees in such a case. We then proceed to drive the bees from another skep, and when as many as we require have been driven, we make up our lots by uniting three or four together. This is done by throwing down the lots on to a sheet on the ground and letting them all run into the hive together. The bees are all gorged with honey and so mixed up, that there is no attempt at fighting. The best of the queens can be dropped down amongst the bees near the entrance and will run in with them. The bees can then be introduced into the moveable comb hive ready prepared for them. We have had bees driven in September, and even in October; put into empty hives, the only frames containing strips of comb-foundation, and by liberal feeding they have done very well, coming out quite strong in spring; but we think it the better plan to give built-out combs, and, if necessary, feed up with thin syrup (recipe No. 4 of *Guide-book*, p. 161) as rapidly as possible. If the combs in the skeps are very straight and clean, it may be advantageous to transfer some of them, but we hardly think that, as a general rule, transferring answers. Comb-foundation of good quality is now so cheap, and the risk of introducing disease with the old combs so great, that we do not advocate transferring from skeps.

Driving condemned bees is the most economical way of increasing an apiary, and at the same time we may, if we like, take advantage of the opportunity thus afforded to us to explain the process and its object, and get a convert to the more humane system of bee-keeping.

USEFUL HINTS.

WEATHER.—Bright sunny days, with a night temperature of 55° Fahr., are favourable to the gathering in of the harvest, and to feeding and preparing our bees for winter. The barometer continues 'steady,' having stood for many days at about 30·40, and the weather is decidedly more 'settled' than at any time during the present summer. We may also look forward with hope to 'St. Luke's little summer,' which usually prevails from October 18th well into November. For feeding and getting bees into condition for wintering, if we ourselves had 'made the weather,' we could not have made it more suitable for our purpose than that we now enjoy. *Ergo*, those who lose their bees must blame themselves

only. A paragraph in the *Morning Post* states that 'the honey harvest in North Yorkshire is a failure, and it is feared that the bees will be nearly extinct in that part of the county next year.' The forecast, we fear, applies to most other counties as well as to 'North Yorkshire.'

Feeding, during the present unusually fine weather, has no doubt been carried on with unceasing vigour in well-managed apiaries. Allowing the poor bees to perish, when sugar, of the best quality for feeding, can be purchased at 21*s.* per cwt., or 2¼*d.* per lb., is wretched policy. We have already given 3 cwt. of this sugar to our bees, and before all are well-provisioned for the approaching winter, 2 cwt. more will be required. In a copper we place 56 pints of water, and bring it up to boiling-point. A cwt. of granulated white cane sugar is then added to the water, which checks the boiling for a few minutes. When it again boils, an addition is made of 3½ oz. tartaric acid; 11 oz. salicylic acid solution; and 6 oz. of salt; and the boiling is continued for about ten minutes. Our 'Raynor Extractor'—minus its cage and gearing—stands beside the copper, and receives the syrup, which is covered by a close-fitting top. This boiling operation is performed in the morning, and by 6 p.m. the syrup is cool enough for use. Syrup cans are then called into play, and from the tap of the extractor a sufficient quantity is drawn to occupy every colony in the apiary in storing until the following evening, when the process of feeding is resumed, and the syrup is still found sufficiently warm for the purpose.

Robbing, to which the fine weather and copious feeding are most conducive, *must* be prevented at all hazards. If once well established—and a few hours on a fine day, with sundry inducements, will suffice to establish it—the bees become thoroughly demoralised, and the utter ruin of the apiary follows. While feeding is going on the strictest watch must be kept over the hives—yea, as strict as in swarming time, and the slightest indication of an attack on any hive must at once be checked in the beginning. Our best remedy is spraying the robbers with carbolic solution thrown from a syringe with a very fine rose. The pilferers, covered with a fine carbolic-scented spray, retire discomfited, but will often renew the attack again and again. But perseverance invariably gains the victory. No element of disturbance—as the introduction of condemned bees, uniting, manipulation, and other operations—should be allowed in an apiary while copious feeding is being carried on. The only time allowable for manipulation is during a cool evening, when the bees are all inside their hives. In such a season as the present the starving colonies of neighbours often prove a great nuisance to the intelligent bee-keeper who feeds and cares for his bees. It behoves all such to be on the alert, and, if neighbours cannot be persuaded to feed their bees, to take most careful measures to prevent their depredations. Mr. Rushbridge, in *Bee-keeping, Plain and Practical*, tells us that 'Feeding, as a rule, should be over by the end of August, or early in September at the latest, each stock having not less than 20 lbs. net of sealed stores,' and warns us, 'That it is extremely unwise to postpone it until late in the autumn, since by that time the bees will have decreased in number to about one third; nor will this remnant be so active as in summer, and the chances are that cold nights will prevail, when much of the syrup will remain unsealed in the combs, particularly in the outer ones, in which condition it eventually becomes unwholesome.' With all this we fully agree, except, perhaps, as regards time. During the present season, for instance, August proved a cold, wet, cheerless month, and September remarkably fine, and far better adapted for feeding bees and enabling them to take down the food and to seal it over. We therefore adhere to our original rules, and W.P. (weather permitting) consider ourselves fortunate, especially in an exceptional season like the present, in getting our feeding over by the end of this month. Nay, we would not blame severely those who continue it up to the middle of next month if need be. Only, let there be no dilatoriness, an exhortation, we fear, which too many bee-keepers require.

Winter Preparation must speedily follow autumn feeding. If colonies are not large enough to cover ten frames, contract the hive to eight, placing a division-board on each side (angular system) or one at back (parallel plan), and let the interstices on the sides be filled with chaff-cushions or other material. A colony which cannot cover eight standard frames ought not to be wintered except as a nucleus. Enamel cloth, glazed side downwards, should cover the frames, with several felt or carpet quilts and cushions upon it. This is the *great secret* for retaining heat below the enamel cloth, and with entrances at full width, and a space of from two to four inches beneath the frames, bees winter perfectly, and hives thus prepared show no signs of dampness. Winter passages cut through the combs we consider advantageous, and prefer them by far to any plan after 'Hill's device,' that is, of providing bee-passages above the frames. Bees in nature hermetically seal with propolis the roof from which their combs are suspended. It is admitted by all that calico or woollen material placed next the frames is at once propolised, and is thus rendered impervious to air or moisture. Our argument is, that enamel cloth is not more impervious than this propolised material. Moreover, in our own experience, bees always winter well in domiciles thus prepared, and at spring the hives and combs are found dry and clean, without sign of dampness or mouldiness. Generally speaking, the bees provide themselves with passages at the upper corners of the combs, and sometimes in other places also. In such combs there is no necessity for cutting passages, but in combs of sealed honey—solid slabs, as they are called—we always cut a circular hole, about one inch in diameter, centrally, and two or three inches below the top-bar.

The Winter Aspect of hives should be south or south-east, and good shelter should be provided at the back. Shortly, to sum up our advice for wintering we name the following points:—Strong colonies, ample supply of sealed food, bees confined to as many combs as they can cover, impervious quilts (or porous, if you will, but in either case plenty of woollen material, chaff-cushions, &c., above the covering quilt), clean floor-boards, sound weather-proof covers, firm storm-proof stands, plenty of bottom ventilation, and no disturbance of colonies after the middle of October. Skeps also must be well protected, and if rendered double-walled by rolling hay-bands around them so much the better.

Section Cases and Spare Combs should be carefully preserved for use another season. The former, we fear, in most cases, have been removed from the hives free from honey storage. The propolis should be scraped off the lower parts, and the whole case wrapped in a sheet of paper, when it may be stowed away in a dry place until wanted. It is unnecessary to separate the sections, even when filled with foundation. As the case was removed from the hive, so let it be returned in the good season coming. This will save a large amount of labour and time, of which we all know the value when supering is required. Spare combs should be kept dry and free from dust.

Queens up to the end of this month may still be introduced, with as little disturbance as possible, and at evening time. We still recommend the cage as causing the least trouble and disturbance with certainty of success. Some of the new methods of introduction—like the new discovery in the appearance of queens—are anything but trustworthy. When we are seriously informed

'That *some queens* cannot be distinguished in outside size and appearance from *ordinary worker bees*,' by a professed expert, and teacher of Queen Introduction, we confess ourselves utterly unequal to assimilating with previous knowledge gained by experience *all* the modern and scientific discoveries promulgated with regard to our favourites, the bees, in this inventive age.

RACES OF BEES.—Mr. Benton's letter (1802, p. 465) in our last issue is very suggestive. Can it really be a fact that queens raised in an apiary of Cyprian, Syrian, Italian, and Carniolan bees, are sown broadcast over our English apiaries, as queens of pure race? We trust not, and most sincerely hope that the explanation may prove satisfactory. Judging from the complaints of amateurs, who have introduced imported, so called, pure Italian queens, respecting the vile temper of their progeny, we have long been suspicious of the purity of these Italians. If the Carniolan race, already introduced to so many English apiaries with the character of the gentlest of bees, has been similarly produced, we may at once conclude that the 'gentleness' will soon disappear. *Absit omen.*

MIDDLESEX AND WORCESTERSHIRE B.K.A.

We have much pleasure in giving circulation to the following timely counsels which have been forwarded to the members of the Middlesex and Worcestershire Bee-keepers' Associations respectively:—

'I am deputed by our Committee to send a word of timely warning to our members. This cold and wet summer has not only deprived us of our harvest of honey, but has left our stocks most probably without sufficient food for the winter. The only way to avoid the entire loss of your stocks in such cases is to feed them up at once, and rapidly, with thick syrup, until they have sufficient stored to enable them to get through the winter. Feed in the evening when the bees are at home, and take care not to leave syrup about, so as to attract robbers.'—HENRY BLIGH, *General Secretary.*

'As the funds of the Association will not permit of an autumn visit from the expert, and taking into consideration the fact that the past season has been the worst that has been experienced for the last 25 years—very little honey having been collected by the bees, which are thus left without a sufficiency of stores for the winter—I venture to urge upon you, and upon all bee-keepers, the extreme importance of feeding all stocks with syrup without *any further delay*. This should be done as rapidly as possible, and each stock to insure its living through the winter should have from 15 to 20 lbs. of syrup given to it.—A. H. MARTIN, *Hon. Sec., Worcestershire B.K.A.*

'*Directions for Making Syrup.*—White lump sugar, 10 lbs.; water, 5 pints; vinegar, 1 oz.: salt, ½ oz.'

A REPORT OF SOME EXPERIMENTS IN APICULTURE.

TO THE COMMISSIONERS OF AGRICULTURE.

By N. W. M'LAIN.

(*Continued from page* 463.)

STARVED BROOD.

A disorder which has been quite common in several States during the past season is resultant from conditions prevalent during severe and protracted droughts and long periods of extremely high temperature, such as has existed over large areas.

The disorder is significant and important, not so much on account of the actual numerical loss entailed upon colonies affected—which in my own case, and in many cases reported to me, have been severe—as in furnishing proof of failure on the part of those food elements indispensable during the breeding season to meet the large demand for larval food, and essential in maintaining the health and vigour of the bees while the digestive and secretory organs are being taxed to the limit of their capacity. This failure of natural resources results in low vitality, susceptibility and predisposition to disease, and inability to successfully perform the function of hibernation. With some exceptions, due to local advantages, throughout the States stricken by the drought of the past summer the bees have entered upon the period of hibernation under conditions more or less unfavourable in proportion as they have suffered in greater or less degree from the effects of the all-consuming drought and heat.

The symptoms of starved brood are distinctively characteristic. Upon opening the hive a slightly offensive odour may be noticed if the colony has been suffering for some time. If the comb-frame be lifted from the hive, and the bees shaken off, few, if any, eggs can be found. Of such brood as is sealed, the cappings appear to be thin and flat, and slightly sunken, and commonly of darker colour than is usual in prosperous colonies. Upon opening the cells they are found to contain dead pupæ in various stages of development, always inferior in size, and the food supply exhausted.

In the midst of sealed brood patches of uncapped larvæ appear, and sometimes a patch of five or six inches square, and sometimes there seems to have been no effort made towards sealing half the grown larvæ in the hive, although the time for such sealing may be far overdue. The membranes of such larvæ do not present the plump, pearly-white appearance common to well-fed larvæ. On the contrary, the membranes are more or less shrunken and wrinkled, and not unfrequently, when the larvæ have reached the advanced pupa stage, the compound eyes begin to colour, and the cells are partially capped and then abandoned, and the appearance is that commonly designated by the term 'bald-headed bees.' Sometimes a few of these bees, dwarfed in size, emerge from the cells and engage in the labours of the hive with what vigour and for such term as their limited development will permit.

In a number of tests made during the past season the progeny of the same queen, reared under directly opposite conditions of larval growth, so varied in size as not to be recognisable as offspring of the same progenitors. The reason for this variation was not far to seek. The changed conditions of the colony during the time when the different generations were being reared determined the modification in development. The remedy I used and prescribed for others was a preventive rather than a curative. Starved brood means starved bees. If the cause be removed the effect speedily disappears. All that needs to be done is to supply them with a substitute for those resources essential to their own health and vigour, and indispensable in brood-rearing, in search of which they are rapidly and vainly wearing out their vitality.

The recipe for preparing the remedy is as follows:—

To 10 lbs. of sugar add half a pint of dairy salt, two tablespoonfuls of bicarbonate of soda, two tablespoonfuls of rye flour, two tablespoonfuls of very finely powdered bone-ash, and one tablespoonful of cream-of-tartar. Mix thoroughly, then add two quarts of hot water, and stir until thoroughly dissolved, then boil for two or three minutes only. To one half-pint of fresh milk add three fresh eggs thoroughly beaten, and when the syrup is cool enough to feed add the eggs and milk, and when thoroughly stirred, feed warm. Feed in the hive as one would feed honey or syrup.

I used this same food for preventing spring dwindling and for building up colonies to full strength and efficiency, so that all colonies may be ready for work at the very beginning of the season, when surplus honey may naturally be expected. This food fed in the hive keeps all the bees at home to aid in performing the

functions of brood-rearing, and in keeping up the temperature of the hive, instead of spending their little remaining strength in battling against the cold, damp winds while searching for the food elements needed to repair the waste and drain upon their vitality while hibernating, and indispensable in brood-rearing. This food is not intended for use until after the bees have had a good flight in the spring, and almost any grade of honey or sugar may be used. This special food is a potent stimulant and tonic to the adult bees, giving tone and vigour to the organism, and furnishes the elements essential in brood-rearing in the place and in the manner suited to the convenience and tastes of the bees. No greater quantity should be fed than is required for the current needs of the colony.—*American Bee Journal.*

WROCKWARDINE BEE CLUB.

The third annual exhibition in connexion with this useful and flourishing club, the president of which is the Hon. Mrs. Robert Herbert, took place on Wednesday, in the Boys' Schoolroom, Wrockwardine. The Association has for its object the encouragement, improvement, and advancement of bee-keeping, with a view to helping cottagers to add to their incomes and the preventing of cruelty to bees; and thanks to the untiring energy of Miss M. E. Eyton, of Leaton, who since its formation has worked most indefatigably and praiseworthily in the capacity of honorary secretary to ensure success, the Association is rapidly increasing both in numbers and usefulness. Mr. J. Palmer has also contributed materially to the prosperity of the club by the aid he has rendered Miss Eyton as assistant hon. sec. Mr. W. G. Preece, jun., of Shrewsbury, a gentleman well known as a successful exhibitor, officiated as judge, and his decisions gave general satisfaction. Owing to the past unfavourable season, the quantity of honey shown this year was not so large as formerly, but taking into consideration the adverse circumstances with which those connected with the apiary have this year had to contend, the exhibits, both in quality and quantity, must be regarded as very satisfactory. In addition to the exhibits for which prizes was given, the club appliances, including ingenious contrivances for the better and more economical extraction of honey, and the various other requisites connected with bee-keeping, attracted considerable attention; while the exhibition of live bees in hives, the property of Miss Eyton, formed one of the principal features of the exhibition. Bronze and silver medals, which had been won by Miss Eyton and Mr. J. Palmer, were also on view, and as an attestation of the usefulness of the society and the skill of its members, there were also shown certificates of competency as experts in modern bee-keeping, which had been granted by the British Bee-keepers' Association to Miss Eyton, and Messrs. J. Palmer, H. Brooks, and J. Shuker. There was, too, a valuable collection of bee literature, including fifteen volumes of the *British Bee Journal*, kindly lent by Mr. Ding, in addition to other similar works contributed by various members of the club. Mr. Brooks (bee-expert to Miss Eyton) and Mr. Palmer kindly and intelligently explained to the visitors the utility of the many objects of interest in the room. Among those present at the earlier stage of the proceedings were the Hon. Mrs. Herbert and Miss Herbert (Orleton), Lady Mary Herbert and the Misses Herbert (The Styche), Mrs. Jenkins (Charlton Hill), the Rev. A. P., Mrs. and Miss Salusbury (Wrockwardine), Mrs. Clayton, the Rev. Mr. Pennell, &c. Following is a list of awards:—

Open to Club Members.—Best 12 1-lb. bottles—Mr. John Palmer (Wrockwardine), 1; Mr. Fryer (Overley), 2. Best and most complete hive for general use—Mr. John Palmer, 1.

Open to Cottager Members only.—Best 6 1-lb. bottles—Mr. C. Clarke (Overley), 1; Mr. John Shuker (Allscott), 2.

Open to All Comers and Members.—Best 12 1-lb. bottles—Mr. J. Palmer, 1. Best made hard candy for feeding bees—Mr. C. Clarke, 1; Mr. Fryer, 2. Best cake bees-wax, not under 1-lb.—Mr. J. Shuker, 1; Mr. J. Palmer, 2. Best honey drink, not intoxicating—Mr. J. Palmer, 1. Best vinegar made from honey—Mr. J. Palmer, 1; Mr. John Shuker, 2.

Open to Cottagers Only.—Best 2-lb. cake made with honey—Mrs. Charles Mainwaring (Charlton), 1; Mr. John Shuker, 2. Best 1-lb. pot of preserve made with honey instead of sugar—Mrs. C. Clarke (Overley), 1; Mrs. J. Shuker, 2. Best bunch of bee flowers—Mr. C. Clarke, 1; Mr. H. Shuker (Allscott), 2; Mr. W. Mainwaring (Charlton), special prize.

Open to School Children under Fifteen.—Best bunch of wild bee flowers—Kate Fryer, 1; J. Palmer and Sydney Bremmell, 2 (equal); Bertie King, 3; Harry Price, 4.

The Crop and Honey Market.—Reports from all over the State are to the effect that the honey crop is so short that it is no exaggeration to say that it is a total failure. There is hardly an apiary in any of the hitherto most prominent bee-keeping counties of the State which has this year produced surplus honey enough to pay interest on the capital invested therein. The same reports come from the East, and never since the care of bees attained the proportions of a regular industry has the honey yield of the United States been so limited as in the season now closing. In conjunction with the limited output, however, has come a marked rise in prices, but these comparatively high figures are after all of little value to the bee-keeper, for of what use would it be to him were honey to be quoted at even a dollar a pound if his bees produced no surplus for sale? The experience of the present season is, after all, only a repetition, on a more extended scale, of what has been the uniform history of the industry ever since the first colonies of bees were brought around by the isthmus and sold here for 200 dollars apiece. First there has come a succession of good seasons; the stock of bees has largely increased; the price of honey has gradually lowered; and finally many have gone out of the business in disgust. Then a bad season has come, or a succession of them; there have been no wild flowers, or the natural bloom has not contained the usual amount of nectar; the honey crop has been short; prices have risen, and a few, who were located in exceptionally favourable regions, have made large profits. This has stimulated others to go into the business, and the result has been another period of heavy production, low prices and small profit. For those who have been able to secure anything like a fair crop, the present season will be a bonanza. And those who have been sufficiently far-sighted to provide their bees with an abundance of forage, without placing any dependence upon the natural bloom, will this season reap a good reward for their enterprise. Those who have taken this precaution are few enough by the side of the many who are accustomed to 'trust to luck;' but this lends emphasis to the general proposition that the bee-keeper who treats his colonies precisely as he would any other kind of animals upon which he placed dependence for an income, and sees that provision is made for a bad season, will come out ahead in the long run, while the one who trusts to nature will run behind.—*San Francisco Chronicle.*

Seasonable Hints.—It is of vital importance that every colony of bees should have a thorough inspection at the end of the honey season. It would be very exceptional if some colonies were not found queenless, and robbing is sure to follow. Parent colonies that have cast swarms are generally the ones found wanting in this respect, and if attention is not given at the close of the honey-flow, the bees will get the start. When the flow ceases, the bees with their powerful force of idlers

hunt up and rob such defective colonies. It matters little whether such queenless colonies are weak or strong, they will not defend their stores. The mischief does not stop here; when robbing bees become aroused they will overpower and destroy colonies that may be in proper condition. It is of the utmost importance to see that every colony has a good fertile queen at this season. The reason why colonies having cast swarms are often found queenless is, that at the time of maturing they have but the one young queen; they have no brood to fall back upon, if the young queen becomes lost, when she issues alone into the open world to receive fertilisation, surrounded by myriads of enemies. In returning she sometimes enters the wrong colony. September is the proper month to feed all colonies that may lack in food, for winter bees cannot be fed successfully during freezing weather, and if fed early, they seal the honey over. Unsealed honey in the combs near the bees during cold weather becomes diluted with the moisture from them, and is unhealthful. Caring for, handling and disposing of the honey crop also demand our attention during the latter part of the season. It has been too common to ship honey to distant markets at a low figure. No one can as successfully build up a demand for honey as the apiarist himself, and the business is far safer in his hands than in any other. The place to commence operations is at home, where we have the entire care and control of the matter. Several thousands of pounds of honey may be disposed of in almost any locality with much greater profits than by shipping. Build up a home market, and never drive business away that can be transacted at home.—*American Agriculturist.*

Save the Mark.—Well, Pat, how is the hive of bees I gave you getting on?

Pat. Shure, your honnor, it was yeself that tould me they would be after marking the spot the nixt morning, and whin I stooped down to see thim make the mark, a little divil fetched a moighty big lump over my eye that niver a bit could I see at all at all for a wake.—Honeysuckle.

Killed by a Wasp.—On Saturday, September 22nd, a farmer named F. M. Turnell, of Brixworth Lodge, near Northampton, was stung by a wasp, and he died a few minutes afterwards. He was walking in his garden, when he felt the sting of a wasp near the left temple. As the puncture caused great pain, and a swelling followed, a doctor was sent for, but before his arrival, not a quarter of an hour later, death ensued, the deceased having suffered most acutely.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements.)*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

MORE HOPEFUL.

[1815.] A fortnight ago we were all in the dumps at having to carry food to our bees on the moors, the combs were empty, hives became half depopulated, some stocks died out entirely, and all this with mile upon mile of purple ling blooming right to the threshold of the hive. 'Old Sol,' however, would not smile upon the scene, and when this is the case nectar will not be secreted. Under the action of sunlight the contents of the plant-cell are actively perfected, starch, sugar, and nectar perfumed and permeated by the active principle of the plant. We may pity Sun-worshippers, but when we consider how an absence of sunlight means ultimate death we may perhaps forgive them if they pity us.

But I mustn't let my pen wander into this region of thought. To our bees. The sun started shining brightly on Tuesday, August 11th, and continued daily till Friday, when all was changed in so short a time. The smell of the incoming heather honey was strong. On Sunday the frames were becoming heavy and brood was visible in various stages. The only question then was, that if the weather held up till the 22nd (the heather being fortunately late) bees would gather plenty of stores for winter, and perhaps give us a surplus. I am thankful to be able to report everything, for once, happening as we would like it. So now nothing remains but to trundle the hives home and use our discretion as to robbing and feeding—robbing the bees of their winter food, rapidly feeding up to replace it. Life is too short to make the rapid feeders, as per the most recent formula.—X-Tractor.

BLACKBERRY HONEY, &c.

[1816.] 'Welsh Novice,' *alias* 'East Glamorgan,' in your issue for Sept. 20th (1814), waxes very indignant over my letter (1787) and tries to acquit himself of flying round and stinging in the dark, by instancing such household names as 'Useful Hints' and 'Amateur Expert.' Had he studied his *Journal* diligently he might have seen that the latter gentleman has allowed his real name to be published to the world. However, we in 'poor little Wales' must congratulate ourselves that we have at last amongst us a bee-keeper who hopes by his anonymous writing to be at least as well known and respected as the two gentlemen named above. *Facts* do not seem to convince 'E. G.', and it is, therefore, useless for me to instance any more large yields of honey in short periods. As 'E. G.' raises the question of the *quality* of blackberry honey, I should much like to see the subject ventilated again in *B. B. J.* My experience of this honey is that it is light in colour (amber), rather thin, strong but pleasing odour, and excellent in flavour. I have found it very slow in granulating. In 1885 Mr. T. B. Blow examined my apiary, and, before opening a hive, called my attention to the strong aroma of honey, which was perceptible some feet from the entrances. He was much interested when I explained to him that the only flower then blooming in profusion was the blackberry. He tasted the honey and praised it very highly. He told me, I believe, that it was the first time he had come across honey gathered solely from this source.

Although 'E. G.' fears (perhaps 'hopes' would express his feelings better) that I am 'out of the running' when it comes to competing against him at the shows, yet I warn him that he may find a sample of even the despised blackberry honey hard to beat!—Edward J. Gibbins, *Neath, Sept. 22nd.*

WINTER PASSAGES—FEEDING BEES.

[1817.] I being a keeper of bees now for ten years, although but a cottager, I go in for the frame-hive, as I think if it pays to keep bees at all it is by keeping them in the frame-hive; but of course we know it is the first outlay that cottagers cannot afford as a rule, neither could I afford to buy hives. I have ten frame-hives which I make myself, which I think any one may do if they have the mind for it now, as we all know to our experience this has been as bad a year for bees as I should think any one could remember. Much has been said in the *Journal* about feeding, which must be done or lose the bees. Many

cottagers cannot even afford to buy sugar, let alone feeders; but still if sugar can be got, any common wide-mouthed bottle will answer for feeding, as I have now fed up fourteen hives with nothing but a common bottle costing simply nothing, which I think answers every purpose, as well as feeders costing 1*s.* to 6*s.* 6*d.*, as I see in the *Journal*. I bought one feeder for 1*s.* 6*d.*, but I prefer an ordinary bottle to that. I see a little has been said lately about winter passages through the combs, but I, like others, think it is useless work cutting winter passages. Being a bee-keeper for the time I have, I think I may form an opinion. Now, I never make any passages, nor lay pieces of wood under the quilt, as I see recommended by some, and I have never lost a single colony during the winter; that is my experience. I always leave every stock well stored in the autumn sufficient to last till May. Keep them warm and dry. With plenty of stores and bottom ventilation I think passages through the combs are not required, but still we all have different opinions on that as well as other things.—F. GOLDSMITH, *Bolney, Hayward's Heath, Sussex, Sept. 22.*

JOTTINGS FROM SUSSEX.

[1818.] Deeply I sympathise, Mr. Editor, with our fellow bee-keepers at this discouraging season; and all the more as its results had been generally unexpected. I never knew my bees stronger or in better condition for work than they were last spring, and they gave me some beautiful sections from the early fruit-blossoms; but my whole honey harvest from nine hives has only been about fifty pounds; perhaps I ought to be thankful for that.

May we not, however, learn a lesson from our bees? How often have we robbed them of the chief part of their stores, and left them for a time comparatively destitute; but instead of giving way to despair and ceasing to work, have we not observed that they worked away as hard or harder than ever, apparently determined by all means to repair their loss? Sugar, fortunately, is very cheap, and the expenditure and trouble which now are necessary to bring our little labourers through the winter, may be abundantly repaid by them next year. I found Simmins's dry sugar feeders of great service during the spring and summer, giving little trouble, and preventing any anxiety as to the bees running short of food, even during my absence from home.

At the end of last month I examined my hives thoroughly, and found that although full of brood they were very short of stores; I consequently commenced giving them daily a supply of syrup, using Blow's 'Perfection' feeder (an admirable feeder!) at its full capacity, and on examining them again to-day (Sept. 17th) I find that they have, with only one exception, a capital supply of sealed stores, sufficient to last them well into next spring.

I am very glad that 'A Bee-keeper of West Kent' can report a complete cure of foul brood and hope that he will not be troubled with it again. I am thankful to be able to state that there has not been any recurrence of it in my apiary, a fact which proves, I think, that this annoying disease may be cured by the plan which I adopted without any destruction of bees, hives, or accessories.

The carbolic acid cloth has again proved to be of essential service, but I have not thrown away my smoker as some of your correspondents appear to have done, for I have found it very useful in cases where bees have become unusually irritated, also for driving them from section crates, &c. And your suggestion of having rolls of brown paper with straw, in the centre, and the ends dipped in saltpetre, has proved most convenient.

Many of the suggestions in the *Journal* I have found to be of great value, but I venture to doubt the value of one, viz., that the hive entrances should be left open at full width all the winter. I may be wrong, but my experience leads me to believe that this is a mistake. I have kept bees for many years and have never lost a single stock, even in the severest winter, but I have always closed the entrances in winter time so that only about two bees can pass each other. I think that this is desirable to economise warmth, and to prevent the bees from feeling, as with fully opened entrances they must do, the various vicissitudes of the weather. I find that when covered up very warmly, and the entrances thus contracted, hardly any dead are to be found on the floor-boards, the bees seemed to be as numerous when examined in the spring as they were when shut up at the beginning of the winter, and there has been a very small consumption of stores. I use hay above and around the brood-nest as far as possible, having in most hives an inner and an outer case. Occasionally during the winter months on fine days I open the entrances wider, but close them again before nightfall. I substitute flannel for the American cloth quilts, for the latter decidedly produces damp.—A SUSSEX RECTOR.

[When using American quilts wider entrances are necessary than when stocks are covered with porous quilts. See 'Useful Hints' on Winter Preparation.—ED.]

ONLY A SUGGESTION.

[1819.] Yes, Mr. Editor, I own up at once it is only a suggestion. But let us note here that all advances in bee-keeping were made through either accident or experiment; and what is experiment but theoretical suggestions put into practice? So applying the principle of division of labour, I will make the suggestion, and the readers of the *Journal* can put it into practice, if they like. It is a plan for making fast or slow feeders in which sugar and water can be used without boiling, and (here's the difference) *inverted* over feed-hole. Its advantages will be (a beetle too early to mention them, perhaps) existing feeders can be used with slight modification, and large five to thirty pound rapid feeders could be made cheaper and better than the well-known ones of Mr. Simmins.

Now what prevents us from putting our pound of sugar and half pint of water, more or less, into the ordinary bottle feeder and inverting it at once? The result would be that the sugar would settle at the bottom, and, by clogging up the holes, prevent the air from rising, and no air-bubbles rising means no syrup dropping into the throats of the tiny workers. Clearly we have to provide something to allow the air-bubbles to rise freely, and also for the thickest parts of the syrup to fall to the bottom ready for use.

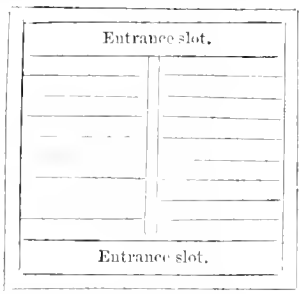
This can be done by affixing a piece of perforated tin or zinc in the form of a cone inside the perforated cap of the ordinary bottle feeder, taking care that the base covers all the perforations in the cap and the apex, or point reaches about two thirds the inside height of the bottle.

Section of Bottle. Usual Cap. Improved Cap. (Dotted lines represent perforated zinc.)

To use: Put in sugar and water to match, place the cap in position and invert, and the thing is done—no boiling, no syrup spilled, and the index can be set to the number of holes required. By making a large bottle-shape part of tin, feeders to hold ten or thirty pounds could be produced to sell at 1*s.* 6*d.*, and for rapid feeding with unboiled syrup would be superior to others, inasmuch as the food is brought directly over the cluster.—HONEYSUCKLE.

FAST FEEDER.

[1820.] Many thanks are due to you for the plain directions (page 445, Sept. 13) for making a Fast Feeder. I set to work before breakfast the next day, and made one. It beats all I have used. Having a 'plough,' I groove the bottoms in, leaving the bee-space. Many, like myself, in out-of-the-way country places, will find some difficulty in getting ⅜-in. stuff for divisions, but most likely have plenty of broken or soiled sections. These answer well, either 1-lb. or 2-lb., by *increasing* the superficial dimensions, and *decreasing* the depth, and putting in a ⅜-in. division, grooved and slotted at the bottom thus:—



I stop my joints with 'patent knotting' instead of wax, and also dress the wood floats of some old-fashioned round tin feeders with the same, on both sides, which prevents their getting saturated with syrup.—W. E. BURKITT.

EXPERIENCE IN SOMERSET.

[1821.] I have been very much interested and instructed in reading the experience of some of your correspondents which have appeared in the *Journal* from time to time, and finding you have not many correspondents in Somerset, I thought it may prove interesting, if not instructive, to some of your readers if I gave my experience.

Four years since a friend presented me with a swarm of bees, which induced me to become an apiarian; and though I have not found it a very profitable business, I have gained experience which hitherto had been my object, and which, I believe, will enable me to make it profitable in the future.

I commenced this year to get an apiary with as little cost as possible. In May I got my first swarm from an oak-tree in the little village of Compton. A friend, Robert Syms, and myself, arrived about eleven o'clock. After cutting the entrance about ten inches square with hammer and chisel, and after giving them plenty of smoke, and getting plenty of stings in return, I was enabled to take out the combs after cutting them in the centre. I found it impossible to take them out whole. There were six in number, some of which were two feet long, the shape of a shield, which was the shape of the tree inside. I fastened the best of the combs into a straw hive, then put the hive near the entrance, and commenced to smoke the bees out of the tree. They came out, but refused to enter the hive, but clung to the trunk of the tree. After waiting some time, my friend called my attention to a small cluster of bees on a spray about four yards from the tree, which turned out to contain the queen. I placed her against the hive; she walked in and all the bees followed suit.

In about half-an-hour I was on my way home with a very strong colony, which I put into a bar-frame hive on foundation. In this village there are many bee-keepers of the old school, who have committed hundreds of colonies to the brimstone pit. So in the spring of this year I went round to a few of them and induced them to allow me to drive a colony, for which I paid 1s. per colony. I commenced the first three colonies in August following on a very cold day. I went without my smoker, and my villagers won't very soon forget it. They were close against the highway; they were so vicious that they stung all who came in contact with them. A family of tramps came by, seven in number, every one of whom was badly stung. My friend had to go after them and take the sting out of the lady's hair. An old man came by with his donkey and cart, and the bees stung the donkey on the nose. The donkey ran backwards into the ditch, and there he stopped, rubbing his nose on the ground, until he was lifted out. Even the cat had to run for her very life. However, I succeeded in bringing away three good colonies.

The following week I went to a farmer and drove five lots out of fifteen; these I drove the proper way, profiting by my experience the previous week. I had very little trouble, as we drove the five in little more than an hour. The farmer had very little knowledge of bee-keeping, his bees are allowed to rob and fight as they please: dead bees were to be seen in every quarter. I went the following week and drove the remainder, and had them all placed in bar-frame hives. I have driven bees three years, but I have never seen such a scarcity of honey as this year. I don't think they average more than two pounds each; hence, Mr. Editor, as you have told us, hundreds of colonies belonging to cottagers must die this winter, for feeding is a practice country bee-keepers have very little knowledge of. My friend lives in this village, and I have instructed him, to the best of my ability, to keep bees in bar-frame hives; he has two very good colonies for the coming year, so I hope there will not be many more committed to the pit in this village.

If not troubling you, I should like to say a few words to those who, like myself, wish to make bee-keeping profitable without purchasing expensive boxes. I may say my boxes are made in the following manner:—I get empty boxes from the grocers, not larger than two feet each way. I make them water-tight by tinning the corners and well painting all over. I then have a makeshift, of my own making, without top or bottom, that will hold ten of Abbott's patent frames and dummy-board. This I place in the bottom of the box close against the entrance, so that I have two or three inches between the makeshift and sides of box to fill up to keep them warm in winter if necessary. In the spring I can lift out the makeshift, so called, and clean out the box with very little trouble. The bottom of the box must be very plain. Then, with a good quilt, it is impossible for the bees to get out of the inner box. These can be worked on almost any principle. With the outlay of a few pounds I shall be able to establish a small apiary containing ten or twelve colonies for the coming year. To allow foundation to hang clear of the bottom bar, so that the bees can build a little drone-comb, I had to cut a strip of emery cloth. What reason can be assigned for not making it the exact size, not to have any waste? —JOHN BROWNING, *Street, Somerset.*

AN AMATEUR'S EXPERIENCE WITH A NEW FEEDER.

[1822.] Having to give my seven strong stocks of bees 20 lbs. of sugar each, I decided to 'go in for' a rapid feeder. Accordingly I found as I thought just what I required advertised in the *Bee Journal*, price 1s. 6d. From the drawing or illustration of it, it appeared to me to be almost or quite large enough to cover the tops of the frames. To my surprise when it arrived I found that it only held three pints of liquid, and this ran out again almost as fast as I had poured it in. So I then 'ran' some melted glue all round the bottom and corners inside, and, as I thought, made it waterproof. Great was my horror, however, when, after placing the feeder on a hive, and pouring in some warm syrup, to find that it all ran through, drowning the bees

and half spoiling the colony. I have now poured some melted pitch round the inside, and it 'holds' at last. I was obliged, moreover, to make a fresh lid, with a hole in the centre, covered with perforated zinc, through which to pour fresh supplies, as the glass sliding lid let every bee out directly on being opened.

I have now made a feeder of my own invention. It is $17 \times 15 \times 5\frac{1}{2}$ inches deep, and holds 20 lbs. of sugar. I find 10 pints of water and 20 lbs. of sugar when boiled up only *measure* 20 pints. I use a little salt, but *no* vinegar, and my syrup never candies, provided that it is not boiled for more than three or five minutes. The bees will take down the 20 pints (it weighs 30 lbs.) in forty-eight hours. I find the best thing in which to boil 10 lbs. of sugar and 5 pints of water is an ordinary large tea-kettle. It boils quicker than in a saucepan.

The cottagers' bees in this district are dead or dying. I fear there will be few straw skeppists around here next season.—APIARIST, *Fairspeir House, Ascott-sub-Wychwood, Oxford, September 22nd.*

ANOTHER MINORCAN QUEEN.

[1823.] On Monday last, the 10th inst., I received a letter from Mr. F. C. Andreu, Minorca, accompanied by a small box, or cage, containing a Minorcan queen. On opening the cage I found all its inmates as black as Mr. Abbott has already described them, and as lively as crickets.

I soon had a stock of Carniolans ready for her, and placed her majesty therein. To-day I opened hive and found she had begun to lay in two combs. I noticed she was exceedingly lively, and, by what she has done already, should say she is very prolific. As I have Carniolan drones still flying, I have inserted one of the frames containing Minorcan eggs in the hive where the drones are, and trust I shall (if weather is favourable) get some young queens mated to Carniolan drones.

I have just got some bees hatched, the progeny of a Carniolan queen mated to a Ligurian drone, and like them very much for activity. Have any of your readers any experience of this cross? if so, will they say how they like them?—C. HOWES, *Cottingham, Sept.* 13.

SUGGESTION FOR SCHEDULES.

[1824.] I see by your last issue that the schedules for next year are under consideration. On looking over the prize lists of this season's shows, it has struck me whether the British Bee-keepers' Association would not give more encouragement than hitherto to the exhibition of articles in which the products of the apiary are used, not confining it to food, drinks, and medicines, but leaving it open to include all things, by offering medals and *good* prizes (?), and allowing the *names of the articles* to appear on them? I take it for granted that steps will be taken to prevent for the future a person exhibiting a collection of goods *in his own name* articles made *by others*, which I am told was the case at one of the large shows during the past season.—W. E. BURKITT, *Buttermere Rectory, Hungerford, September 24th.*

WASPS, &c.

[1825.] During the month of August a neighbour of mine told me that the wasps had taken possession of a bee skep in which was placed in 1887 a strong swarm of bees, and that the wasps were very strong in numbers; and he wanted it taken, but was timid of them. So I went at dinner-time one day to take observations for destroying them the same night, and I then noticed what I considered very strange behaviour on the part of the wasps, namely, that there were three wasps fanning or ventilating the hive with their heads away from, and their tails to, the hive, which is just the opposite to the bees when fanning, as their head is to the hive. The wasps had cut two extra holes for entrance or exit, and the fanning was going on on the south-west side of the hive. I should like to know if any of your subscribers have noticed anything of the kind at any time. I stopped the two side entrances with wet mortar, and about eight o'clock that same night I had a piece of brown paper dipped in sulphur and brought it lighted quickly to the front hole, and I believe killed every wasp in the skep. I then lighted the skep and found it full of wasp-comb, with brood in all stages. Many of the grubs not sealed over were not killed by the fumes of sulphur, which seems very extraordinary considering all the matured wasps were; and what also seems so very strange (considering the delicate nature of the bee grub), these wasp grubs lived out-of-doors, exposed to the cold nights, unprotected for a fortnight, until they were drowned with the rain. Our secretary, Major Fair, can vouch for the correctness of my statement, as I took the skep up to show him the next night, after destroying the wasps, and gave him one comb, and he kept it until the rain destroyed the grubs. And another thing that seems singular was that you could have seen them continually opening their mouths for food for at least a fortnight after being exposed. I do not know how other districts fare for a secretary, but I am happy to say that Teddington has one in Major Fair second to none for a fraternity of spirit in everything pertaining to bee-keeping. If I notice anything about bees that I do not understand, I have the privilege to go to him at any time, and I always receive a warm welcome and every benefit he can give me.—W. D. MARLOW, *Teddington.*

[Both wasps and hornets 'fan' at the entrance to their nests during very hot weather. We have frequently seen them do this, tail to nest. *Tenacity of life in wasp larvæ.*—As a boy we have frequently tried to destroy wasp larvæ with sulphur and exposure, but only when we put them in the oven, in order to prepare them as fish-bait, were we successful in destroying their vitality and stopping their always gaping mouths. We are pleased to hear that you have so indefatigable a local secretary.—ED.]

Echoes from the Hives.

Romford, Sept. 20th.—Echoes from the hives have grated roughly on the ear this season. But I am pleased to find exceptions. In June I cut out the crowns of two of the old cone skeps and put on a super skep. Four weeks ago I looked for the honey. Two or three small pieces of comb quite empty. Fortunately I did not take them off as many others did. September 19th went to take off supers, and found one nearly full of delicious honey. All the skeps (*four*) had filled up well during the last three weeks, from whence I know not.—W. LOVEDAY.

Evesham, September 23rd.—This season has been the worst ever experienced in this county, and unless bees are fed liberally and at once there will be a great scarcity of stocks next spring, especially if that spring should be a cold and prolonged one. Nearly all the swarms about here that were not fed have perished.—A. H. MARTIN, *Hon. Sec. Worcestershire B.K.A.*

NOTICES TO CORRESPONDENTS & INQUIRERS.

R. DE S.—1. *Introducing Queen.*—Under the circumstances your proposed plan is the best. Keep her without food for thirty minutes before introduction. 2. *Feeding.*—You should give each stock at least 30 lbs. of syrup to store for winter use. We have no notes at hand to refer to as to the loss by evaporation of syrup during storing. 3. *Winter Passages.*—We prefer them through *all* combs about the size of a shilling. 4. *Diseased Bees.*—These should be burnt at once.

R. W.—1. *Suspicious Comb.*—Not foul brood. 2. *Broodless Hives.*—We should think there is a queen, but, owing to the very little honey about, that she is not laying now. There ought certainly to be at least a small patch of brood.

J. C., *Waltham.*—1. *Inverted Combs.*—The honey will be stored always at the top. The queen will breed as well, no matter which way up. The disadvantage of reversible frames is that there is a deal of trouble involved with no return for same. 2. *Distance of Bee-space between Combs.*—In early spring the colony increases more rapidly by contracting the bee-space. In hot weather the natural spacing is the best. 3. *Size of Brood Chamber for Tiering Hives.*—14½ inch by 18 inch. 4. *Number of Racks to use in one Hive.*—In your district two would be ample. 5. *Distance between Hives.*—Six feet. 6. *Remedy for Stings.*—Wear a veil, and get used to the stings on your hands. The more you receive the less will the effects be felt, until at last you will scarcely notice a single sting.

H. Marrs.—*Drones Flying.*—You have an unimpregnated queen in the hive. You must supersede her or unite the colony to another, destroying the virgin queen.

H. A. Edmondson.—*Condemned Bees.*—They are bees driven from straw skeps or boxes from which the combs and honey are taken. These, if not for the intervention of the modern bee-keeper, would be 'condemned' to die—by sulphur.

G. S.—*Queen Cells.*—The bees are not preparing for swarming. We should judge that the queen has been killed; this frequently takes place in autumn if the bees are disturbed too much by over-manipulation. A too free use of the smoker will cause the queen to be 'balled.' All manipulations in autumn should be conducted as quietly as possible, and always of an evening. Strange bees entering a hive during manipulation is a frequent cause of 'balling' the queen.

Apis Mellifica.—For Leeds consult Mr. Grimshaw, Horsforth, near Leeds; for York, Mr. C. A. Atkinson, Tockwith, near York.

A. W. F.—*Ichneumon Pupæ.*—You are quite right in supposing that this is an instance of the destruction of some coleopterous larva by those of a species of ichneumon. Identification of the particular species is, however, scarcely possible under existing conditions. Of the larva which has been eaten out, nothing remains but portions of the desiccated skin; and so far as can be made out from examination of the mandibles, legs, and spiracles, it would appear to have been that of a cockchafer (*Melolontha vulgaris*). The young ichneumons are in the pupa condition, but approaching maturity—most of them being still alive; but until they emerge from the membranous cases in which each one is separately enclosed, the species cannot be determined with any certainty.

Inquirer.—There are no signs of foul brood in the piece of comb, but the number of pellicles in each cell are so numerous that there was not sufficient room for the development of the bees.

D. C.—*A Barren Queen.*—A dissection of this queen shows that the ovaries are in perfect condition, and that the tubes are, in all cases, full of ova, so that you are no doubt correct in supposing that no eggs were laid. The spermatheca was filled with spermatozoa, all in perfect condition, rendering it a matter of certainty that fertilisation had taken place. It is therefore somewhat a subject of conjecture as to why this queen failed to lay eggs, seeing that all the conditions as revealed by microscopic examinations are favourable. Probably it might have been injured slightly by pressure from incautious handling.

Holder.—1. *Size of Queen.*—Insects are of their full natural size when hatched out from the Chrysalis, and do not grow like animals, but there is an exception as regards the mother insects, they become more rotund and distended in the abdomen. You will find a fertile queen is shorter and thinner when no breeding is going on than at other times. 2. *Food for Queen.*—Your plan is novel, and certainly a good one. You would find a paste of sugar and honey do very well.

J. H. P.—*Phenolated Syrup.*—Try filling an empty comb with your syrup. You can drive it into the cells with a syringe, then put this comb right in the centre of the brood-nest. The bees will store it, and in about two days repeat the operation, and so on till you have at least five or six frames filled and sealed.

W. Ord.—1. *Condemned Bees.*—The small proportion of unsealed syrup will not hurt. They will require some immediate food, and will use what remains uncapped. 2. *Packing*—This should be done as early as feeding can be dispensed with. Glad to learn you are successfully advising your neighbours.

F. Goldsmith.—It would take about 18½ pounds of sugar to make 25 pounds of syrup.

Correction.—No. 1813, p. 470, line 17, for 9 *inches* each lift, read 9 *in* each lift.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin
Appleton, H. M., 256A Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley & Flood, 26 Donnington Road, Reading.

HONEY MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Benton, F., Laibach, Carniola, Austria.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Simmins' Bee Company, Limtd., Rottingdean, near Brighton.

METAL ENDS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Edey & Sons, St. Neots.
Godman, A., St. Albans.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.

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Editorial, Notices, &c.

BEE-KEEPING AS A HOBBY.

As a people, we have been characterised as a nation of shop-keepers, and there is much truth in the taunt, for very few among us take up anything without being fully satisfied, in *our* own mind, that we have carefully calculated the cost *and the profit*, and thus become fully assured that it will pay. Who among us has not heard, and perhaps assisted with, calculations as to the profits of poultry-keeping, rabbit-rearing, dogs, canaries, *et hoc genus omne?*

Although we each and all consider we are keeping these various kinds of live-stock on purely business terms, and for profit only, we are sadly mistaken. There is some hidden mystery about this desire to have and keep things which are all one's own. No sooner is a child able to talk than it appropriates a kitten, for which the child will almost sacrifice itself if need be, and then, as years roll by, the desire expands till nearly every possible living thing has been kept and petted. Never mind if the eggs cost a shilling each to produce, or the rabbits about four times as much as they could have been purchased for, a certain satisfaction has been the result of our trouble, and we rest satisfied.

Bees are, in our opinion, one of the best of subjects for 'hobbists,' and we claim to have kept nearly everything that can be kept. First, as to the £ *s. d.* question. If judiciously managed, and we can only have sense enough to avoid fads, they will, taking the cost and produce of, say, ten years, show a good balance on the *right* side of the account, and this to a greater extent than the majority of hobbies. Secondly, as to trouble. No stock can be cared for with as little trouble during a year as our bees. In most summers we should require to do very little to them, and from October to March nothing except watch that the doorway does not get blocked with snow. As to the interesting problems of bee-life, there is nothing so fascinating and instructive, whether considered only as an evidence of the peculiar manner in which an insect can obtain its living, or, if more deeply studied, as an exemplification of a wise and far-seeing Providence, guiding and directing our bees that they shall, while in search of their necessary sustenance, be the means of increasing our food at the same time by fertilisation of the fruit-blooms of our gardens and orchards. This fact of the increased crops of fruit, which really does arise from the labours of the bees, should be considered as an item of profit arising from their care and protection. In our opinion, no garden in country districts should be without at least one stock of bees. So far as the supply is concerned, there is nothing to prevent honey of the finest quality being as plentiful as the typical 'blackberries' if we will only keep bees everywhere so that the delicious nectar may be gathered and stored instead of being wasted as at present. Bad seasons like the present must of necessity be encountered, but the good seasons must be borne in mind, when every blossom is a small honey factory, and only our little friends are necessary in order to obtain this sweetness for ourselves.

Hobbies inculcate patience, forbearance, and forethought. Let either of these three qualities be wanting in the 'hobbist,' and he cannot be successful. This fact alone should go far to soften parents' hearts to deal kindly with the peculiar tastes of their olive-branches. We would especially urge that bees are especially fitted to bring out the three qualities named to perhaps a greater degree than any other pets we know. We can picture to ourselves the sorry figure an impatient bee-keeper would cut after opening his hive and exhibiting his temper to his bees; they would teach him more in five minutes than he would have credited if a friend had lectured him for an hour on his failing. And we venture to think that ere long they would cause his impatience to be a thing of the past.

For teaching forbearance, bees are pre-eminent. Nothing we have ever seen so soon resents a rebuff, while at the same time docility is their dominant characteristic when properly treated. Forethought must be exercised with bees, for unless the proper action is taken *quite* by the proper time, disaster will surely follow.

We are firmly convinced in our own mind that as a nation we should be more respected among the nations of the world if we could make these three qualities the guiding rule of our fellow-countrymen generally. For this reason we urge upon all, and especially upon our clergymen and schoolmasters, to deeply consider the national good

they can secure by so directing the inherent taste for hobbies that even the poorest and most ignorant in the land that they shall, while gratifying their personal pleasure, be imbibing such moral principles as shall make them individually better husbands, neighbours, and citizens.

A REPORT OF SOME EXPERIMENTS IN APICULTURE.

To the Commissioners of Agriculture.

By N. W. M'Lain.

(*Continued from page* 477.)

The Control of Reproduction.

In order that the laws of heredity and the active principles of selection may be practically and persistently applied in the breeding of bees, I have, in obedience to your instructions, continued my experiments, striving to discover a simple and practical method for securing control of the natural process of reproduction.

I devised and constructed a fixture, which I call a fertilising cage, 22 feet square and 26 feet high. Selecting a level plot of ground, I set four rows of posts, four posts in each row, forming a quadrangle. These posts are 4 inches square and 30 feet in length, set into the ground 4 feet, and exactly 7 feet apart. Four rows of girders, 2 by 4 inches by 22 feet by 4 inches, are halved in two and bolted to the inside of these posts, the first row 5 feet from the ground, then three rows at intervals of 7 feet until the top is reached. The upper three lines of girders are continued from each side of each inside post, forming a brace on each side of each post at intervals of 7 feet, and forming the bearings for the wire-covered frames which cover the top of the cage. The space from the ground to the first girder—5 feet—is covered with matched lumber nailed to the outside of the posts, leaving a smooth surface on both sides. The upper 21 feet on the sides and the top of the cage are enclosed by wire-covered frames 7 feet square, bolted to the girders on the sides, and securely fastened with screws to the framework at the top.

The height of the cage is thus adjustable at 26 feet, 19 feet, or 12 feet from the ground by simply lowering the screen-frames forming the top and the upper row (or two upper rows, as the case may be) forming the sides of the enclosure, the purpose being not only to determine whether queens or drones would mate in this cage at full size, but also how small an enclosure would be sufficiently large to give suitable freedom and range of flight.

These wire-covered frames are framed like a two-light window sash, with a mullion in the centre, on which the two breadths of wire-cloth meet. Strips of wood secure the edges of the cloth, and cover all joints at the sides of the frames. With the lower board of the siding settled into the ground, and earth filled against the inside, and the door tight-fitting, the cage is bee-tight. I used drab-coloured wire-cloth, which obstructs the light but very slightly. A shelf is fitted against the four sides of the cage on the inside 1 foot from the ground, and alighting-boards directly opposite on the outside. Upon this shelf the hives are placed.

Each hive has an exit cut in either end, and an exit is cut through the wall of the cage registering with the outer exit of each hive, over which, on the outside of the wall, a piece of queen-excluding zinc is nailed. These hives are painted strikingly distinguishing colours, as red, white, blue, green, yellow, and black, and a space opposite each on the alighting-boards, and a corresponding space on the outside of the wall of the cage, are painted in corresponding colours. The colours are repeated in the order named, which separates the hives of the same colour a sufficient distance to prevent confusion, and the bees and queens readily distinguish their own hive by means of colour as readily as by location.

If the inner exit be left closed for a day or two after a colony is placed in a cage, the worker-bees readily learn to enter their own hive upon returning from the fields. I found that the queens had no difficulty on returning to their own hives after taking flight in the cage. To test that fact I frequently opened a number of hives in succession, and, placing the queens upon the palm of my hand, tossed them high in the air, when they would take wing and fly away.

Upon reopening the hives a few minutes later, they would be found upon the combs. The queens and drones appeared to fly and disport themselves with as much freedom and regularity in the cage as they did in the apiary outside. The virgin queens were introduced from the nursery by various methods. Some were hatched in colonies in the cage from cells matured in strong queenless colonies, and some from cells built under the swarming impulse, which this season could be produced by artificial means only. Mature drones were selected from the hives in the apiary, and also from those returning from their excursions and liberated in the cage, and sealed drone-brood was removed from the hives in the apiary and hatched in strong colonies built up in large hives in the cage, and these drones all flew with freedom and regularity.

A few times I observed a queen embrace a drone and fly all about the cage with entire freedom, and then, the embrace being broken, each flew away in different directions, the queens returning to their hives, and the drones at once rejoined their fellows in the upper part of the cage. It is needless to add that in such cases no accouplement had taken place.

The results realised from this line of experimental work have been so meagre, and the circumstances attending the experiments so unexceptionally unfavourable, that it is not easy to form an estimate of their value, or determine their significance. Of the many scores of trials made but six were successful, but six queens were fecundated in the fertilising cage. However, as the improvement of the bee to the highest attainable excellence outranks all other considerations in practical importance and scientific interest, the methods and results of any intelligently conducted experiments having this end in view are well worth placing on record. Besides, future trials may receive direction from a multitude of failures, and the trying experience of the past season is not without compensating features, for even the little grains we make in positive knowledge, although apparently trifling in themselves have often significant meaning and broad bearing on questions of great value and importance.

My experience and observation lead me to believe that the main reason why this experiment was not satisfactorily successful was because of the protracted drouth and high temperature which lasted through the entire breeding season, the like of which has not before been known in this region. From May 1885 until December 1887 drouth prevailed, broken only at long intervals by light showers. The succession of two summers of excessive heat and unbroken drouth ensured disaster to the present season, cumulative in kind and intensified in degree. Continuous feeding has been required to keep up breeding and to prevent starvation.

Whenever feeding was suspended for two or three days, throughout nearly the entire season, oviposition would cease, and the bees ate their eggs, and it has required persistent trials and careful management to rear drones and keep them alive. It has been difficult to get three or four queen-cells matured in colonies such as in ordinary seasons would rear from twenty-five to forty, and of those permitted to remain outside in the apiary and seek a mate at will, two of every three failed of fecundation.

During the entire season a large majority of the larval

queens being insufficiently fed, died in the cell, and when for days and weeks together the temperature ranged from 110° to 120° Fahr., in the sun during several hours each day the pap-food would ferment and turn a dark amber colour and dry up to the consistency of thick glue at the bottom of the cells with the dead pupæ. When the temperature ranged from 100° to 110° Fahr., in the sun, the average temperature in the hive was from 5° to 2° higher until 112° was reached. Then, when the range in the sun was from 115° to 125° the temperature did not go above 112° in the hive. The fanners were able to prevent the temperature rising above 112° in the hives standing in the sun with a shade-board above the hive cover. The worker larvæ seem to be able to endure a higher temperature than queen larvæ.

This season, as a rule, the drones were much smaller than drones from the same ancestors in the summers of 1885 and 1886, and there was a great inequality in the size of the drones and queens of the same parentage, and reared at the same time in the same hive, and a very unusual proportion of the queens were deformed and unable to fly.

Continued observation and experiment furnish corroborative evidence of the correctness of the theory advanced in my last annual report, namely, that drone bees differ in degrees of procreativeness, properly classified as the impotent, the conditionally potent, and the potent; and that it is the prerogative of the worker-bees to determine the degree of development, and dominate the function of the drones as they determine the kind and degree of development of instinct and organism, and dominate the functions of the queen.

The volition of the queen determines the sex of every one of her descendants; but the life of every individual, as well as the modifications in organism and instinct, depends upon and receives its direction from the worker bees, whose unerring prescience forbids the rearing or maintaining of individuals for whose services there exists no present or prospective demand. It is only when this keen apprehension of the present and prospective conditions of environment indicates a necessity for rearing and maturing potent or potentially potent individuals that such are reared, and matured, and furnished, for the functions they are to perform.

Under circumstances unfavourable in the extreme, a condition of seeming prosperity may be artificially produced, and drones numerically plentiful may be reared and preserved alive. It has taxed my skill and patience to the last degree during the past season to do this. I resorted to every stratagem I could devise to secure a supply of mature drones, but in most cases the workers were either unable or unwilling to supply the drone larvæ with food suitable in kind and quantity, for a large proportion of the drones were dwarfed. Dissection showed the sex organs of this sort to be inferior in size, dry, and empty.

Not one drone in one hundred of those which were fully developed, when held by the legs or wings, or when pressed upon the thorax, were able to perform the expulsion act, and the sex organs of such, with rare exception, contained nothing but a little clear, thin mucus. I have, during the past season, at various times, examined the contents of the sex organs from scores of drones well developed and structurally perfect of the class which I believe to be potentially potent, in which I have not been able to discover active spermatozoa, nor was the mucous secretion present of that colour and consistency which I believe to be the product of special feeding, and indispensable to sexual desire, and for liberating and floating the spermatozoa into the spermatheca.

Without wishing to appear dogmatic, after another season exceptionally favourable for such observation and experience as has furnished more complete data and corroborative evidence, I venture to reassert my belief as set forth substantially in my last annual report, that the preparation for and exercise of the reproductive faculty in drone bees, as well as in queens, depends upon and is determined by the workers. As with the queen, so with the drone, desire and capacity wait upon the will and resources of the workers.

As the queen must be bountifully supplied with egg-food before the egg-cells begin to germinate and mature in the ovaries, so I believe the drone must be well supplied with that special food suited and intended to produce the desire and capacity for performing the act of copulation, the giving and withholding of which is instinctively determined by the worker bees, as the present and prospective condition demands.

Throughout the past season of extreme heat and protracted drouth there was almost a total failure of all natural resources, and all the influences of nature to which bees are subject warned them that there was no actual necessity for feeding and maturing drones, and that the abundance and prosperity with which I had supplied them were artificial and deceptive.

In the impotency of the drones, almost universally prevalent, I find the reason for the almost total failure of this experiment. The fact that both drones and queens flew with freedom and regularity in the cage, and the fact that in a few cases queens were successfully mated in the cage when but few were successfully mated outside, leads me to believe that under favourable conditions satisfactory success may be expected. Experiments in breeding bees during the prevalence of such climatic conditions as those of the past season, are attended with hindrances which I have not been able to overcome. My experience and observation have suggested some changes in the size, shape, and manner of constructing the cage which I believe would be an improvement. If, under favourable circumstances, the control of the process of reproduction can be secured by the use of a device permanent in kind, and of moderate cost, then every queen-breeder and progressive bee-keeper may apply the laws of heredity, and the principles of selection to the breeding of bees with assurance of realising results alike in kind and degree to those which have by the persistent application of the same laws and principles been realised in breeding all kinds of domestic animals.

I have, by establishing mating stations in localities remote from other bees, secured the mating of queens and drones selected on account of their excellent paternity and perfect development. I controlled the flight of the different varieties by the use of queen-excluding zinc.

By crossing selected individuals of different varieties, and by mating selected bees of the same variety avoided in breeding, I have laid the foundation for some ancestral stock of superior excellence. This kind of work requires much patience and persistence during such a season as that just ended. I have begun many other experiments, many of which failed, and others, lacking in completion, require no mention here.—*American Bee Journal.*

ALBURY HEATH.

A Prose Poem.

A rising stretch of lilac-tinted heather touching the near sky—in shape, a shallow oblong basin dipping towards the east—and up the northern slope, and up the southern slope, lilac and green, bracken and heather mixed. And from my feet up to the western brow (touched by the near sky), lilac and green, bracken and heather mixed.

I turn a half-turn to the right and see the tops of trees breaking the sky-line; then to the left-about, and there a chimney-stack pierces the blue. And that is all.

Again I face the west, and down this shallow basin

streams the sunlight, smiting me fervently abreast, and pouring fast on either side its soundless waves.

And then my spirit yearns. But what beyond—the sea? Methinks I hear its roar! Patience, my soul: no sea is there. A forest? I hear the sough of pines! Patience, my soul, come up with me and see; walk up this tilted hollow to the brow. . . . .

The sky has fled; and high, aloof from human company, gathers a sullen frown far in the south.

But, oh, the view, the view, the view! How it has spread and beautified itself.

The trees (seen from below) have ranged themselves stately and tall beside the Queen's highway; girt at their feet by a ring-fence of oak; and they in turn girding a park wherein are statelier trees: old rough-limbed chestnuts, tempest-broken; oaks of another century; rounded beeches; pyramidal firs; and a dense coppice of the silver birch.

And what a landscape! Hillock and hollow, copse and spreading downs; yonder a range of common land capped by a windmill; and there the fir-clad hills of Holmbury and Leith; and nearer, verdant meadows; cornfields thickly sheaved—a diaper of green and gold, pasture and cereal.

Down where the heath slopes suddenly away, a house of ruddy brick peers o'er its rim; and roofs of cottages, low-lying, humbly in the vale; thin-scattered, near and far, houses of finer calibre rise midst umbrageous trees; and as I gaze, a headlong train drives madly through the scene.

Close at my hand a group of meek-eyed cows munch dreamily—dappled and red and milky-white, encouched upon the lilac-tinted heather.

The fitful buzz of honey-sucking bee, and the strong fragrance of the bruisèd fern, delight the senses; and as my eye roams o'er the sombre woods and lights upon 'St. Martha's' on the distant hill, and sees the o'erhanging sun shedding his gold, my soul says, quietly,—'Half-wilderness, but Paradise.'—W. Hollier, *Dorking*.

Foreign.

GERMANY.

The bee-papers of America tell us of a cold and backward spring in America, and I must confess it was no better in Germany. In spite of this we had, however, in some sections of our country, some swarms in the month of May. This was the case where the bilberry abounded in our forests, and rape bloomed in the spring. My bees had only a few days of fine weather to frequent this honey source, but I do not need to do any spring feeding. The old saying of bee-keepers here is true: 'One drop of fresh honey that the bees carry into their entrance is of greater benefit to them than three times as much as one feeds them.' Rape is always the best honey source in early spring I know of. The only drawback with it is that the weather is seldom favourable when it is in full bloom. But only a few days of good flight, and all is well. Where the weather has been favourable when the rape was in bloom, I have extracted at this time, in April or May, from one of the best colonies, some ten or more pounds of honey. That is necessary, as otherwise the queen will not have, in such colonies, enough cells to deposit her eggs, and the swarms will be very small, or there will be no swarms at all. As the rape will thrive only on good loamy soil, it cannot be cultivated everywhere. But as the benefit of rape honey is so great, some bee-keepers of Germany take care to bring their bees near a rape-field. At least, I do it. Thus I wandered with my colonies this spring eight miles from here to the south; and as the rape bloom was over, I brought my bees eight miles from Wilsnack to the north, where white clover, locust, and linden abound. At the end of July, or in the beginning of August, I bring my bees to the heath. You see, dear friends, I am a wanderer; but I should not have had any honey-yield, as so many bee-keepers of Germany have had who do not wander. I have some colonies here in Wilsnack, but they have no honey to extract, while they live only from hand to mouth. It is curious, that in some sections of Germany there was a great honey-flow, and in some others the bees got nothing. Sometimes we have had some very fine days for the bees to work; but we have had rain, wind, cold weather, and the mountains decked with snow. If the weather should be favourable in the months of August and September, I hope we shall have a good crop from buckwheat and heather. The latter is to-day as brilliant as it can be; but it is a pity that the heather honey cannot be extracted.

For comb honey we have no market; at least, it does not pay to sell to such as we have. Extracted honey, by the way, we have a very good demand for. We call it 'slung honey' (*Schleuder Honig*). It sells from 18 to 25 cents, and comb honey from the heather will sell in good years from 12 to 15 cents. You see how favourable it is for the German bee-keepers to sell extracted honey. One year I thought I could sell comb-honey in sections. I got 500 nicely filled sections, and my heart was proud when I saw my riches. The year before I had made a trip to England, and saw at Kensington the beautiful comb-honey exhibited. No doubt, I thought, it will pay to sell such beautiful '*delicatesses*.' Well, I sent samples of my honey to all the dealers I know; but they would pay only 12 to 15 cents for a pound of the finest locust and linden honey, while I got 25 cents for slung honey.

'Please, Mr. Gravenhorst,' said a customer, one day, 'would you not be so good as to take the honey out of that frame? I like it better without it.' What could I do but cut the honeycomb out of the frames? I sold nearly 200 sections; the others (300) I have extracted, and since this time I have run my apiary for slung honey.

You will, of course, have observed that the bees build their combs, when let alone, so that one angle of their cells is at the top and one at the bottom. I was ever of opinion that this position would give the comb greater solidity than when the cells have a broadside at top and on the bottom. The most of our foundation manufacturers work their foundation in such a way that it can be fastened in the frames with one side of a cell at the top. What do you say to this?—C. J. H. Gravenhorst, *Wilsnack, July 24th* (*American Gleanings*).

AMERICA.

Professor A. J. Cook.

The well-known initials, 'A. J. C.,' stand for Albert J. Cook. He is a native of the State in which he resides, having been born at Owosso, Mich., August 30th, 1842. That makes him 46, but he hardly looks it. His parents were Christians to the core; and the daily reading of the Scripture to which young Albert listened, with comments by his father, was reinforced by a daily example which tallied well with the teachings he had heard. He was by no means rugged in health as a child, and his poor health caused him one of the sharpest disappointments of his life, when he was obliged to lay his studies aside for a year during his college course. Entering Michigan Agricultural College at 15, he graduated at

20, and, on account of his health, went at once to California, where for three years he was a very successful teacher. Returning, he spent a portion of two years at Harvard University and Harvard Medical College, with Agassiz, Hazen, and Dr. O. W. Holmes, as teachers. In 1866 he was appointed instructor in Michigan Agricultural College, and Professor of Entomology and Zoology in 1868. He teaches the seniors and juniors, his classes ranging from thirty to forty. Each student who graduates not only studies all about the structure of the bee as an entomologist, but is drilled as a practical bee-keeper, going through the various operations of the season, finding queens, putting together sections, putting in foundation, putting them on and taking them off the hives, extracting, &c. I do not know of any other institution in the world where classes of students are taught in this way.

The personal influence of such a man as Professor Cook is no mean factor in the education of a young man; and a special feature in Professor Cook's work is his Bible-class of students in the Sabbath school. To this work, which has been carried on for a number of years, he has given much time and labour, and the good resulting therefrom no one can correctly compute. It is much to be regretted that the Professor's health is such that lately his physician has peremptorily commanded him to lay aside, at least temporarily, this important work. In this connexion I want to say that I wish every young man in the land could have the teaching of Professor Cook's example in one respect. He is singularly pure and chaste in speech, and I do not believe he ever indulges in any word in any circle of which he would be ashamed in the presence of the most refined ladies.

Professor Cook was one of the originators of the Michigan State Bee-keepers' Association, as also of the Michigan Horticultural Society. He was on the board of the latter Society for some years, and was Secretary of the former for several years during its earlier history, and afterward President for some years. His personal influence has doubtless had much to do with placing Michigan in the foreground in apicultural matters.

To the readers of bee-journals it is not necessary to speak of Professor Cook's character as a writer. Few have written so much or so well. Besides his contributions to the bee-journals, he writes for the *New York Tribune, Philadelphia Press, Rural New Yorker, Country Gentleman, New England Homestead, Science, American Naturalist*, &c. His *Manual of the Apiary* has reached a sale of 14,000 copies, *Injurious Insects of Michigan* 3000, and 5000 copies have been published of his latest work, *Maple Sugar and the Sugar-bush*.

His labours in the warfare waged against insect foes have been important. Remedies first advised by him are now common. If I am not mistaken, we are indebted to him for the very important knowledge of Paris green as a safe and efficacious remedy for the codlin moth.

As a lecturer he holds the closest attention of his audience. As a controversialist he is fair, and never forgets to be the Christian gentleman. In conversation he is a charming talker. He takes great pride in his home, and is easily forgiven for thinking that no other man has quite so nice a wife, son, and daughter, as he.

Drafts are constantly being made on Professor Cook's stock of entomological knowledge in the way of giving information about enemies or suspected enemies of bees, and no mere entomologist could be of the same use to the bee-keeping fraternity as one who is also himself an enthusiastic bee-keeper.

Known the world over as an entomologist and authority on matters scientific and practical in bee-culture, those who know him intimately will always like best to think of him as the warm-hearted, unselfish friend whose charity for all reaches almost to a fault, and whose whole life seems to be a life of Christian love.—C. C. MILLER, *Marengo, Ill.* (*American Gleanings*).

THE AFFAIRS OF A NORTH MUSKHAM MANUFACTURER.

A first meeting of the creditors in the case of William Burton Baker, of North Muskham, Notts., manufacturer of apiarian appliances, under a receiving order dated August 22nd, was recently held at the offices of the Official Receiver, No. 1 High Pavement, Nottingham. In the absence of Mr. Thorpe the Deputy Official Receiver (Mr. J. W. Jeffries) presided.—Mr. Grosvenor Hodgkinson, of Newark, appeared for the debtor, and produced a medical certificate showing that Mr. Baker was unable to attend in consequence of illness. Creditors were represented by Mr. Metcalfe, of Southwell, and Mr. Robert White, of Newark.—Proofs having been admitted, the Deputy Official Receiver said that the debtor's statement of affairs was not lodged until that morning, and had not yet been sworn to. Mr. Hodgkinson had produced a certificate as to the debtor's illness, which he presumed was the cause of the delay.—Mr. Hodgkinson said that was so. He had prepared the statement from papers supplied to him by the debtor.—The Deputy Official Receiver said that the gross liabilities, according to the statement, were 5236*l.* 8*s.* 2*d.*, the amount to rank for dividend being 5047*l.* 8*s.* 2*d.* That did not include a claim for a large sum made by the trustees under the marriage settlement—a claim which would require investigation before being admitted for dividend. The assets as estimated by the debtor were 1585*l.* 7*s.* 10*d.*, from which would have to be deducted 64*l.* for preferential claims, leaving a balance of 1521*l.* 7*s.* 10*d.*, or a deficiency of 3526*l.* 0*s.* 4*d.* The debtor accounted for the deficiency in this way. He said that his excess of liabilities on August 27th, 1887, was 2451*l.* 0*s.* 4*d.*; his net loss in carrying on business for the past year had been 500*l.*; bad debts amounted to 50*l.*, and household expenses for the year 300*l.* In addition to that he had paid as surety for a brother 225*l.*, making a total altogether of 3526*l.* 0*s.* 4*d.* There had been nothing realised from the estate at present. The debtor having no offer to make to his creditors had been adjudicated bankrupt, and the case being a non-summary one the estate would have to be administered by a trustee.—Replying to a question, Mr. Hodgkinson said that he hoped to get the statement of affairs sworn to shortly.—Mr. Robert White was chosen as trustee, with a committee of inspection consisting of three creditors.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.*' *All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts* (*see 2nd page of Advertisements*).

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

WINTER MANAGEMENT.—HIVES, &c.

[1826.] I generally trouble you with a yearly letter on the above subjects, as I do not always agree with the advice of the *B. B. J.*, which, I think, is calculated at times to rather frighten the cottager class from attempting bee-keeping. I get a great deal of useful information from the *Journal* at different times, so I am sure you will not think I am 'wise in my own conceit.'

It is eleven years since I started bee-keeping, and from owning some thirty double-walled hives I have not one now double-walled about the place. Why should hives for

cottagers with *fixed combs* be advertised in the *B. B. J.* on account of their cheapness, when an ordinary box of half-inch wood will winter bees without any loss whatever?

The great secret is to keep bees to not more than seven frames, and with a dummy at *each* side you at all events have a hive with two double walls. I only use a quilt of one thickness of ticking over frames, and three of house-flannel above that. I use no other packing, and have never cut a winter passage, and have never had a stock die from cold. Is not this conclusive that winter passages are unnecessary? I believe in a small entrance, not more than 1½ in. wide by ⅜ths in. high.

I have only had two cases of dysentery in eleven years. One the first spring I kept bees, when I left them all the combs and packed the roof with sweet old hay, which prevented the circulation of air over the quilt, which hay was mouldy in the spring; and the other, two years since, from a leaky roof. They were both double-walled hives.

Except in these cases I have never had a mouldy comb. I can't help thinking that the present recommendations of the *B. B. J.* read very much like the Irishman's blanket. In the first place you recommend the enamel quilt, which, you admit, causes dampness. To obviate this, you recommend the entrance to be left full width and a three-inch space under frames, and then, because, what with the damp and the draught the bees would be starved to death, you must have cushions and packing of all sorts and winter-passages. If bees are confined to a small space with no draught, they will keep the place warm and dry, but you must have a good roof, and I find none better than Simmins's. They keep any rain off the hive-sides, and shade quite two-thirds of the hive-front in summer time; they also make it unnecessary to use any special joint in storifying, and are very handy when examining supers, as they can be just tilted forward, like putting your hat over your eyes when you look through windows, &c. I do not also consider that a propolised quilt is non-porous. Propolis is a kind of gum, and certainly gum absorbs moisture. Indeed I think in this case that Nature is right, and that a propolised roof, be it of straw or any other material, causes exactly the proper amount of evaporation.

I have been much delighted lately with the use of the carbolised cloth. My bees are particularly cross-grained, and it is never a special pleasure to have to manipulate them, and they show their utter contempt for Grimshaw's Apifuge, but with the carbolised cloth they are like blue-bottle flies to handle. Another proof how useful the *Journal* is in disseminating valuable information, which makes one doubly regret at not being able to always agree with it. But I have yarned to the full extent of your space, Mr. Editor, even if I do only write once a-year.—ARTHUR J. H. WOOD, *Bellwood, Ripon, Sept. 27th.*

RAPID FEEDER.

[1827.] To those who are making rapid feeders according to instructions given in *B. B. J.*, the following few suggestions may be useful.

The thin wood for the partitions, which cannot easily be procured everywhere, may be obtained by asking a grocer for small sweet boxes or candle-boxes, &c.; these are generally about 11 or 12 inches long; the long sides will each form a partition of 3¼ inches in depth, and the tops and bottoms, if whole, will make to partitions. The wood is not first-class, but, if carefully used, answers the purpose, and will generally be found to measure under ⅛-inch in thickness.

Those wishing to close up defective joints will find that glue, made by substituting hot linseed oil for the water will, if run into the joints, make them quite tight: this glue, when dry, is quite *waterproof*. Another good plan is to dissolve a little bi-carbonate of potash in melted gelatine, run into the joints, and exposed to *strong* daylight; this, when set, is quite insoluble even in hot water.—L. W. R.

MY YEAR'S REPORT.

[1828.] I admit I have not anything very grand to place before your readers, but I thought I would tell them a little of my experience in this bad year as well as in a good one. My start in the spring was with seventeen stocks, and they all did wonderfully well through the fruit-blooming season: but when they should have been doing still much better from clover, sainfoin, borage, Nepeta Mussini, &c., the weather was so bad that the bees could not fly but very little, and when they could get out there was but very little thin and watery stuff to be got from abundance of bloom. The bees increased so fast in numbers that it was quite a job to keep pace with them. In two hives I was obliged to add frame after frame until I had increased the number up to forty, and then they were so crowded that one lot cast a very large swarm. The remainder of the stocks were either doubled or supered up to the number of from sixty-three to seventy-two 1-lb. sections, some of which were very nicely finished when I removed them on the last Saturday in August. Why I left them on so long was because I continued to hope the weather would change for the better, when I knew that the bees would do some grand work from borage, Nepeta Mussini, Chapman honey plant, &c. I am pleased to tell you that I got altogether 105 lbs. of extracted and 30 1-lb. sections well finished. After extracting was completed I returned empty combs, both of frames and sections, for the bees to clear out; and when this last spell of fine weather came on Saturday, the 22nd of September, I thought I would remove the empty frames and sections from the hives, fumigate them, and store them away for the winter, when, to my surprise, I found instead of them being cleared out, many of them had got quite a lot of fresh honey stored in them; so of course they are still on the hives. In addition to the amount of honey I got about 28 or 29 lbs. of comb-foundation drawn out, in wired frames which I very much admire. I make all my own frames, and don't now make any with metal ends, but leave wood shoulders to the top bar, which I much prefer.

About a month ago a friend of mine asked me to go and see his bees, as he wanted some honey; he had but three frame-hives and eighteen oval-top skeps. He got about twelve very fair 1-lb. sections from one frame-hive and nothing from the other two. I drove (bumped) eleven lots, which gave him about 20 lbs. of honey; one lot was thin and starved; he has six left, but with scarcely any honey. I volunteered to feed them for him, as he knew not what to do, and I hardly knew myself, as he had nothing in the shape of feeders, and he did not like to have his hives cut. So I bought some tins, 8 inches over and 3 inches deep—I mean such as are used for baking cakes in, then got some 9 by ¾ inch board 18 inches long, and cut a circular hole in the centre just large enough for the tin to fit into. I then got some pieces of wood 18 by 3 by ¾ inches, and used them edgeways as ledges across the two—18-inch pieces of board with the hole in the centre and two shorter pieces between, so as to form a box all round the tin. This was well packed with chaff so as to keep the syrup warm; a circular piece of wood was cut and pierced with many ⅜-inch holes, which fitted loosely to the inside of the tin: the skeps were shifted off their old stand for the moment, the new stand with the tin stood on in the place, the tin filled with syrup and the float laid on the top, then the skep was placed over the tin and float. I was very greatly surprised to find how well it answered, as the next day, when I examined them, all were empty, when they were refilled, again and again, until I considered they had quite

sufficient to carry them well up to next April. This is certainly the best way that I have seen for feeding up skeps. Since then I have done the same for another, and recommend others to do so also.

Just a word or two on the Chapman honey plant. This I find to be a very great favourite with the bees. I have counted as many as five bees all busily at work at one time on one bloom, and all the other blooms appeared to have one or more bees upon them at all times when the weather permitted the bees to fly; but still its short duration is against it, as it does not last more than two weeks with me. It is a very rank grower with me; some of the plants reach to the height of seven feet. Although I shall most likely continue to grow some, but I cannot give place to that in preference to the borage and Nepeta Mussini, as they last so long in full bloom. I see in *B.B.J.* for September 20th, page 467, No. 1806, 'Apis Hibernicus' is making inquiry as to where he can get a supply of Nepeta Mussini, and for his and others' information I have inserted in this number a last advertisement, as it appears that most people who required them have taken advantage of previous advertisements; and I should like it to be understood that the reduction in price is just to clear out the stock now on hand, and I shall not be striking any more cuttings until inquiry for them. Wasps are very scarce round here; I have not seen but a solitary one since the spring, and that one was in a church five miles from my apiary.—C. H. W., *Burham Works, Aylesford, near Maidstone, Kent.*

THE A. B. C.

Early Instruction for Beginners.—Things Worth Knowing.

[1829.] 'What a beautiful piece of honey! I wonder if it is artificial, or genuine comb-honey made by the bees.'

Such remarks as this may often be heard from those who have read a statement which has been going the rounds of the papers, that comb-honey is made by machinery entirely independent of the labour of the honey-bees.

When you examine the wonderful workmanship in a piece of comb-honey and observe its great regularity, it seems that there must be some master-builder among the many thousands, whose province it is to direct the acts of the others that the work may go on as one harmonious whole. But if you watch the bees at work you will see nothing of the kind. True, there is a bee called a queen, but the bees do their work without any control on her part. Each bee seems to be working according to its own sweet will, one putting on a bit of wax, another giving it a push here, another there, and the only wonder is, that where so little order or system appears, such wondrously regular workmanship is done.

It is interesting to watch a young worker gnaw its way out of its cell, and become a member of the commonwealth. No mother, nurse, or tutor, is at hand to instruct it as to what its duties are to be, and yet that mysterious something, that we call *instinct*, which is born with the bee, seems to tell it exactly what to do, so that the same perfection of workmanship is found in the hive now as thousands of years ago, no improvement from practice. The bee does not seem to learn to do its work, it *knows* without learning.

The first sixteen days of the young worker's life are spent indoors doing housework and tending baby, and during the rest of its life it is a field-worker, bringing in nectar and pollen from the flowers, also water and propolis. During the busy gathering season, the life of a worker is not more than six weeks, and it seems to wear itself out with work, for the old bees are distinguished by their ragged wings.

The name queen is misleading. The queen is not a ruler, she is simply an egg-layer, and is said sometimes to lay her own weight of eggs in twenty-four hours, that is, about three thousand eggs. She does this, however, only when all conditions are most favourable, surrounded by a populous colony, with a copious harvest, for at such times she is bountifully fed by the workers, that can be seen every few minutes offering food te her.

Under ordinary circumstances a queen is doing pretty good work to lay one or two thousand eggs a-day, or rather in a day and night, for work in the hive goes on day and night. The workers, rather than the queen, seem to control the rate at which eggs are laid, for at some seasons of the year, particularly in autumn and winter, the queen is left to forage for herself, and few or no eggs are laid.

The cells in honey-comb are six-sided and of two sizes, one size, worker, measuring five to the inch, and the other, drone, four. If an egg is laid in a small cell it produces a worker, if in a large cell a drone. At certain times a third kind of cell is built, a queen-cell. When a colony becomes very populous and contemplates swarming, a number of queen-cells are built, looking not unlike so many peanuts, each queen-cell taking as much wax in its construction as would make a great many drone or worker-cells. A queen-cell is not six-sided but round, and the young queen, while in it, has several times as much room as the other young bees.

About ten days before the young queens are old enough to emerge from their cells, the swarm issues. The old queen goes off with the swarm, and when the first young queen hatches, a second swarm is likely to issue, to be sometimes followed in two or three days by a third, and not rarely by a fourth, and even a fifth.

The young queens seem to have a mortal antipathy to each other, and as soon as one such queen hatches her first business is to proceed, if allowed, to destroy her unhatched royal sisters. This she does by digging a hole in the side of a queen-cell, and stinging the inmate in its cradle. If further swarming is contemplated by the workers, they defend the unhatched queens from the attack of the one at liberty, which goes off with the swarm. Previous to going off, however, this young queen may be heard, especially in the still of the evening, uttering a shrill cry, 'Pe-e-p, peep, peep,' replied to by the young queens in their cells, 'Quahk, quahk.'

When no further swarming is intended all the young queens who are sufficiently matured are allowed to emerge from their cells, and when two of these meet a deadly combat ensues. One of them stings the other to death, and strangely enough, the victor is never injured in the struggle, for neither one stings till she gets in a position to deal a death-thrust without danger to herself. In this way the conflict continues till all the queens but one are killed, and those remaining unhatched are despatched in their cradles.

These queen-cells, of which I have been speaking, are usually found on the edges of the comb, and sometimes even on the wood that surrounds the comb. If a hole happens to be in any part of a comb the bees are likely to make use of the space for a queen-cell. If the queen is at any time lost, when no previous preparation has been made for rearing a young queen, a different course is pursued.

The bees select a young larva in a worker-cell, which, under ordinary circumstances, would have produced a worker, enlarge its cell greatly, destroying, if necessary, the adjacent cells for that purpose, feed it lavishly, so that the little grub is literally swimming in a sea of food, and in due time it emerges a perfect queen.

If it should happen that nothing but drone eggs are in the hive, the poor bees will try their best to rear a queen from one of these, but it never grows into anything but a drone, and, I think, always dies in the cell. The fact is, there are only two kinds of eggs, drone and worker,

or queen, for any and every worker egg with the right kind of food and treatment will produce a queen.

The young worker has its rations very accurately dealt out, just enough, and not a particle is left over; but there is no stint in feeding the young queen, and when she hatches out of her cell there is usually enough food (or *royal jelly*, as it is called) left to make one think another queen might have been reared on it.

The time required for hatching out the perfect bee from the laying of the egg is, for the drone twenty-four days, for the worker twenty-one, and for the queen sixteen. Curiously enough, the one that matures the soonest lives the longest, for the queen attains the age of two, three, and sometimes five years.

The life of the worker seems to depend on the amount of work it does, in the honey harvest living only about six weeks; but those which are hatched late in summer live over till the next spring. It is hard to tell just how long the drone would live if let alone, for when forage in the fields becomes scarce he is mercilessly driven from the hive to perish.

The drone is the male, and is a lazy scamp, for he not only does nothing toward laying up stores in the hive, but does not even visit the flowers for his own food. He helps himself to the stores gathered by the workers, then flies about for exercise, and comes back with a good appetite for more.

There seems to be a popular impression that a queen is surrounded by a body-guard or a number of courtiers always accompanying her, and ready to attend to her every want; while some have the notion that the queen-cell is a kind of throne, where the queen holds court and may be found at all times.

So far is this from being true, the queen-cell is torn down shortly after the young queen hatches out, and before she is two weeks old, she commences laying, and may be found in any part of the hive.

No bee accompanies her, but if at any time she stops at any point the workers near her form a circle about her, all facing the queen as if to do her honour. Presently the queen moves on, and the retinue is broken up, to be formed again when she next makes a halt, but the retinue is formed by a fresh lot of workers each time.

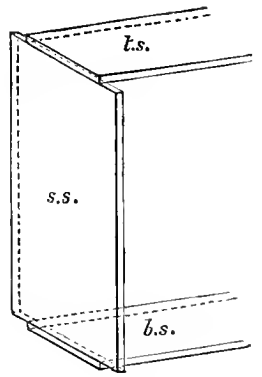
Within the past fifty years great progress has been made in bee-culture. Some men take as much pride in their stock of bees as others do in their stock of cattle, and fresh importations are constantly made from other lands, Egypt, Palestine, the Isle of Cyprus, but chiefly from Italy. The Italian bee is distinguished from the common black bee by having three yellow bands upon its abdomen, being more beautiful in appearance and more industrious in character.

I have only touched upon a few points of interest relating to the honey-bee. That the subject is a large one may be judged from the fact that there are published in the English language three weekly periodicals devoted entirely to bee-culture, besides a number published monthly and semi-monthly. — Dr. C. C. Miller, *Marengo, Ill.* (*Youths' Companion.*)

NOTES ON BEE-HIVES.

Sections.

[1830.] As I have had several inquiries from readers of the *British Bee Journal* respecting some of the glass sections which I described some months ago in the *B. B. J.*, will you kindly allow me to say the top and bottom slips may be cut four inches long, or just sufficiently long to be held in position by their own length within the 1-lb. wood sections, then the sides should be cut sufficiently long to be slightly pressed within—this will vary according to thickness of glass used. By so arranging the slips, starters, or whole sheets of foundation, may be used. The accompanying drawing represents half a glass section, so arranged,—the wood case and the comb not being delineated in the figure. Of course the side slips may be arranged so that the top and bottom slips act as wedges, but the top slip would evidently be likely to fall unless whole sheets of foundation were used.



t.s. top slip. s.s. side slip. b.s. bottom slip.

When whole sheets of foundation are used, molten wax should be painted all round the four edges of the foundation. I have always obtained the best glass sectional honey by using the four-piece pin-dovetailed sections, and I prefer wide frames to hold such. The wood-corners of the usual sample of sections used in this country are a great hindrance to obtaining perfect sectional honey, nevertheless, the wood cases may be removed any time, as I have already intimated, providing full sheets of foundation are fixed, as I described, by means of molten wax, but, of course, the honey cannot be seen shining through the glass unless the section is worked or completed next the glass by the bees. Can one-piece wood sections be obtained anywhere minus these objectionable wood corners? I cannot cut sufficient out with my pen-knife without much labour or spoiling the beauty of the section. The glass sections I have had on exhibition (*i.e.*, some of them) have had to be labelled '*Not for sale*'—they sold so quickly. But directions were posted beside them to 'inquire within,' where, of course, a supply might be purchased.

I have had some glass sections completely filled by using a narrow strip of foundation right across the top, but the bees had 'not to gather honey all the day'—I hope my friends will allow this, as I was only experimenting, and I won't tell how it was done unless urgently asked. It is a grand sight to see a lot of pearly-white sections worked on starters (narrow strips one quarter of an inch wide), which have been made during a clover honey-flow, having no suspicion of machinery.

When glass sections have been on my table, often great wonder has been expressed how it was possible for the glass slips to be held together until the honey-comb was completed; many guesses have been made, and much admiration (I am sure there was no flattery) expressed about the beautiful appearance of them. I believe it would be understood from my previous descriptions that the honey-comb held the slips in place after the comb work was completed by the bees, so that the enveloping wood section could be removed to expose them for sale as I stated, or even to pack them for transit.

I might say I find the divided cell pattern glass section, which I lately made some remarks about in the *B. B. J.*, admirable, as the foundation may be fixed momentarily. The depth of each cell is eleven-sixteenths of an inch; they will probably be advertised in the spring by one of our leading bee-keepers' appliance-manufacturers. I would recommend the wood sections to go with each sort of glass sections as, undoubtedly, they afford some protection, protecting the glass from

finger-marks, breakage, &c., besides enabling you to surprise your friends when you remove the wood cover at the table.—T. Bonner-Chambers, F.L.S., Lond., *Tref Eglwys, Caersws, Montgomeryshire, Sept. 27th.*

P.S.—If the plain glass rims are cast or made deep enough they may be used singly.

[We have received from our correspondent one of his glass sections. We can easily understand the admiration they excite; they are very sweet, cleanly, and attractive. We understand that a patent is about to be taken out for making glass sections: this we think is to be deprecated in an article which very probably may be much in request in the future; the more so as generally the words of a patent embrace much of the ingenuity of those that have preceded the patentee.—Ed.]

EXPERIENCES OF A YOUNG BEGINNER.

[1831.] In reading the *B. B. J.* every week, I notice your columns are open to the young beginner as well as to the experienced hand, and, with your permission, from time to time I intend to send you my experience of bee-keeping.

In the middle of April a friend gave me a *B. B. J.*, and having some spare time I thought I would start bee-keeping. I bought a swarm of bees on the 15th of May. When I got home with them it was too dark to hive them, so I got up early next morning, put a sheet on the ground and hive on it (as advised in *Modern Bee-keeping*), threw them down on to the sheet, and they soon began to rush in with a joyful hum; in about half-an-hour I placed the hive on stand. I put them on five frames of comb given me by a friend, and fed them for the first five days, and every three days I gave them a frame of foundation, bringing them up to nine frames the second week in June. I put on a case of sections, but could not get the bees in this till I took one frame away. On the first Monday in August I took the sections off, thinking from what I had read in the *B. B. J.*, and what I could see of the front of sections, there was no honey there; but when I opened them I found eight sections sealed over and four three parts full, so I suppose I must think I am well off in the year 1888. I sold six sections for 7*s.* 6*d.* In the middle of August a farmer sent for me, and asked me if I would drive his bees. From what I had read in *Modern Bee-keeping*, and my own confidence (I had never seen such a thing), I said I would. I drove two hives the next night, and united each of them to a swarm of this year. I told him how to feed them. He paid me for my trouble, and thanked me very much. One hive had about three pounds of honey, and the other about twenty to thirty pounds and very few bees. Every comb was full of sealed honey except two, which had a little brood at the bottom; the only way I could account for same was, that it was mostly last year's honey. He told another farmer how well I drove his bees; he sent for me, and told me if I drove two of his skeps I could have his bees, which I did on the first Tuesday in September. I united them, and put them on two frames of comb and three frames with half sheets of foundation, and fed them with twenty-five lbs. of syrup. I opened hive fourteen days after and found the foundation all drawn out, and largely added to, the combs full of syrup and nearly all sealed over. I fed the other hive with twenty pounds of syrup, and as the weather has been so fine in September I feel I shall go into the winter pretty safely. I have to thank *Modern Bee-keeping* for being so successful with my bees, and Mr. Ralfe of Cheshunt for some good advice. I may say I have never used gloves, and I have only been stung two or three times.—Amateur, Bar-Frame.

First Steps in Bee-keeping.—'Bo-ooo a-boo-hoo-o.' 'Why! what are you crying about, Bobby?' 'I c-caught a fly, Mamma, and the naughty fly had a p-pin in its tail.'—*Communicated by* Honeysuckle.

Echoes from the Hives.

St. Goran's, St. Austell, September 25th.—For the first time for three years I must feed my bees if they are to live.—C. R. S.

Dorking, September 27th.—As for *honey* from the heather, or any other source, I have seen none, except a few nice sections taken from my own bees in June.—W. Hollier.

Sheffield, September 27th.—I have not an ounce of honey from one of my apiaries (twenty hives).—W. T. Garnett.

Horsforth.—As I write (noon, Oct. 1st) snow is falling heavily, the glass registering frost during the preceding night, barometer falling. Everything points to a bad ending, for the bees are at home (thank goodness!), but, alas! with insufficient stores; we shall have to feed, the store may not get sealed, dysentery perhaps following. These feather-like flakes will be the 'the last straw'—to use an Hibernicism—to many a disheartened bee-keeper.—X-Tractor.

NOTICES TO CORRESPONDENTS & INQUIRERS.

J. S. F.—1. *Lost Queen.*—No; do not introduce a Carniolan queen until you are certain the other is lost. There being no brood at this time of the year is no sure reason for saying there is no queen, as where bees have not been fed and stimulated the queens have ceased to lay. The bees not carrying pollen is also no sign that there is no queen. You must search well before you venture to introduce another queen. As you have the *Bee-keeper's Guide-book* you will find all your questions answered there very fully. 2. *Spreading Brood.*—No; October is too late to spread brood. You should not interfere with any brood you may now find in the hives. Feed up and make the hives comfortable for winter without delay.

W. T. Lofting.—*Feeding Straw Skeps.*—Cut a hole in the crown; this can easily be done with a sharp table-knife, first stopping up the entrance. When a circular cut has been made in centre of crown, the plug so formed can be pulled out, a puff or two given to drive the bees back; while so doing use a bottle-feeder, well covered up, to prevent other bees visiting it and so starting robbing.

Horace.—*Partially Finished Sections.*—You must uncap that portion of sections sealed over, and place them at the back of the division-board, raising the same a quarter of an inch from floor-board, the bees will then clean them out; when they have done so, wrap them up in paper and put them in a warm, dry place. They are best preserved from the attacks of mice by enclosing them in a box. It will not do to use them next year; having some of this year's honey in them, their appearance as finished sections would be entirely spoiled thereby.

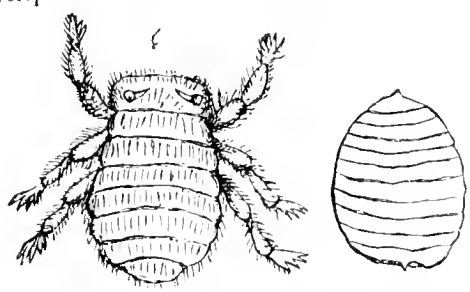
T. Colton.—*Removing Super.*—As the super is well filled it will be no detriment to the bees to allow it to remain on, but we should first remove it and ascertain the condition of the stock hive.

L. W. R.—1. *Wintering.*—We have successfully wintering stocks which on Oct. 1st did not cover more than four to five frames. Under the circumstances detailed by you, you may succeed very well. 2. *Enamel Quilts.*—Yes. 3. *Absence of Brood.*—We should have preferred to see some brood, but your experience is not singular this season. 4. *Superseding Queen.*—The weather having turned much colder we should hesitate to change the queen now. 5. *White-headed Bees.*—These are undeveloped bees. 6. *Bottom Space.*—If your hive body is separate from the floor-board, you can put a rim between, otherwise you cannot adopt this device.

East Kent.—1. *Queenless Stock.*—As these have been queenless some time, we would recommend you to unite in preference to introducing a queen now. 2. *Syrup.*—We prefer boiling the syrup for a few minutes, because, in our opinion, it saves the bees considerable trouble in ripening it for storage. 3. *H. B. K. A.*—The Secretary of the Herts B. K. A. is the Rev. L. Seager, The Grange, Stevenage.

M. H.—1. *Feeding.*—The quantity you name is about half enough of each. 2. *Rusty Feeders.*—This is a drawback to feeders made of *cheap* tin. There is no way that we know of to prevent it. Bees do not seem to relish it, but we cannot say if it actually injures them. 3. *Sugar.*—Brown brewing sugar is not suitable for syrup, and in some seasons bees would not take it down at all. 4. *Proportion of Sugar in Syrup.*—We could not tell this except we made the syrup or knew to which formula it was made.

J. Mighall.—*Bee Parasites.*—The parasites forwarded are of a species called *Braula cœca*, or blind louse. It principally infests queens, especially foreign ones. It is difficult to catch, being so active in its movements. According to Dr. Hess, the eggs hatch inside the insect, and the young larvæ are nourished by the secretion of a gland; but when they arrive at maturity they are deposited on the floor-board of the hive, when they take the chrysalis form, from which they emerge at the end of fifteen days. The young lice remain on the brood until they have the opportunity of climbing on to a passing bee. Strong fumigations of tobacco dislodge them, and cleaning the floor-boards several times with a mixture of water and carbolised acid is important. They are prevalent in the southern portions of Europe, but generally in this climate they die off. We append an illustration, greatly magnified, of the insect in its developed and undeveloped states.



W. King.—1. *Locality for Bee-keeping*—You would find the place mentioned suitable for bee-keeping. 2. *Properties of the Locality.*—It would be good at other times than when the heather is in bloom. It is a pastoral country, but without much fruit. 3. *Selling Honey.*—You would find no difficulty in obtaining a sale for large quantities of honey. 4. *Disposal of Honey.*—The best way of disposing honey would be to get co-operative stores or wholesale grocers to take it. 5. *Obtaining Land.*—There is no doubt that you would be able to rent the land in the manner you propose. The approximate rent would be according to the value of the surrounding land—from 50*l.* to 100*l.* per annum. 6. *Best time of the year to begin Bee-keeping.*—The spring. 7. *How to set about it.*—A personal visit to the district and a fortnight's search for a suitable place. 8. *The Average Profit per Hive.*—Thirty to forty shillings, according to season. 9. *The Best Book on the Management of Bees.—British Bee-keeper's Guide-book*, by Thos. W. Cowan (Huckle, Kings Langley, Herts). For further information place yourself in correspondence with Mr. R. A. H. Grimshaw, hon. sec. of the Yorkshire B. K. A., Horsforth, Leeds.

W. D.—*Prize-takers at Shows.*—It is generally understood that the gainers of prizes at shows undertake to supply the general public with the articles exhibited, such as hives, feeders, &c., at the prices stated by them at the show. We are not aware that the Royal Show at Nottingham is an exception to this acknowledged rule.

P. Carter.—*Sugar.*—The sample is a pure cane sugar, and we do not see that it would be injurious to the bees. It has, however, a coarse, rough, treacly taste; and we are not surprised that the bees did not take to it kindly. Refined granulated sugar is the most suitable for syrup-making.

N. Preston.—*Foul Brood.*—There is no doubt that this is a case of foul brood. You should lose no time in endeavouring to get rid of it; please refer to previous numbers, or to Cowan's *Guide-book*, page 148, as to the best methods of cure.

Corrections.—Page 473, col. 2, line 11 from bottom, *for* point *read* front; page 474, col. 2, line 19 from end, *for* thin *read* thick.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Appleton, H. M., 256a Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
British Bee-keepers' Stores, 6 George Yard, Fenchurch St.
Bubtt, E. J., Strond Road, Gloucester.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.
Hutchinos, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley & Flood, 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Benton, F., Laibach, Carniola, Austria.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Simmins' Bee Company, Limtd., Rottingdean, near Brighton.

METAL ENDS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Edey & Sons, St. Neots.
Godman, A., St. Albans.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.

THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

BRITISH BEE-KEEPERS' ASSOCIATION.

The Autumn Quarterly Meeting and Conversazione will take place on Thursday next, the 18th inst.

The Representatives of County Associations will hold their usual meeting at 149 Regent Street, at 4 o'clock.

The Quarterly Conference of the County Representatives with the Committee of the B.B.K.A. will take place at 105 Jermyn Street, at 5 o'clock.

The Conversazione will be held at 105 Jermyn Street, commencing at 6 o'clock. The Rev. J. L. Seager will open the discussion with the subject of 'County and District Associations.'

Secretaries of County Associations are requested to advise their Representatives of the above meetings.

UNITING.

This is a subject of very considerable interest to many bee-keepers, and is one requiring careful attention before finally closing down for winter. Bees may be safely united as late as the middle of November; in fact, the later the operation is left, the less excitement occurs. We cannot say there is greater security from fighting, for the simple reason that in our practice such does not occur under the method now to be set forth; but there is one item of considerable importance, and that is, when uniting is left until bees have practically discontinued flying, stocks standing at a distance of anything less than the usual range of flight may be at once brought together and forthwith united. The union of stocks is carried out for various reasons. In the early part of the season stocks may be united to get greater strength for securing the harvest; at all times because one or other may have lost its queen; in the autumn both for securing stronger stocks to come out in the spring, and for the purpose of saving considerable labour and expense in feeding; and without a doubt it pays so to do.

We start out with a fact, ascertained from long-continued practice, which is, that queenless bees will always unite peaceably, and without anything in the shape of syrups, scented or otherwise, being sprinkled over them. This being the case, it is at once shown that while bees will sometimes unite, and simply destroy the surplus queens when none have been removed, where fighting does occur under such conditions, it would almost certainly have been avoided had all but one queen been first removed by the bee-keeper.

We have before us the broad fact of the case, but for daily practice we will endeavour to so explain exactly how the various operations in uniting may be carried out that the novice, or even the more advanced apiarist, need never have the mortification of seeing thousands of his honest workers destroyed, as far too frequently has been the case, through some sad blunder on his own part.

Whether two colonies are to be united earlier in the season by bringing each gradually nearer each other during the period of frequent flights, or later are brought directly together, it is imperative that one of the queens be first removed; and it is then equally important that the union take place during the evening of the *next* day (after removing surplus queen or queens from their respective hives). With bar-frames, the operation is readily carried out by alternating the combs of one lot with those of the other; using the best stored combs, and (if any) placing the largest patches of brood at the centre of the cluster of bees, and others with less in declining order, on either side.

Another way is to place one stock hive immediately above the other without disturbing the contents at all, other than removing one queen on the previous day. In a similar manner the bees from a skep may be united to a queenless stock in a frame-hive, by inserting the skep under the frames of the other hive, using a second body for protection meanwhile. As soon as the brood has hatched, the bees will leave the combs and carry up to the frame-hive what store of honey they may have had below, though, of course, all would intermix meanwhile.

In uniting bees standing in skeps, it is necessary to drive both (or all) lots into *separate* skeps, find and remove the queen not required, and at once throw all the bees together into the best stored hive while it stands in an inverted position. Now turn such skeps the right way up on to blocks of wood to prevent crushing the bees, and allow those flying to draw under. Notwithstanding the above explanation, we should consider ourselves failing in our duty as 'Instructor' did we not

say just here that 'once having driven the bees out from their fixed combs, the truest economy would be shown by then and there transferring the combs into the frames of a substantial modern hive.'

Uniting driven bees to standing stocks is a frequent source of disaster to many, more particularly when no attempt is made to remove any of the queens. The only really satisfactory way of strengthening weak stocks by adding such bees is the following:—Remove some of the frames of comb from the lot to be strengthened; hive two or more driven lots upon such combs in a make-shift or other hive, standing near to the other; and should the combs not be well stored, feed both the old and new lot judiciously until plenty of young bees are hatching; remove one queen and unite as first stated, on the evening of the next day. In this way a really substantial stock will be secured, instead of the almost certain destruction of the stock it was hoped would be strengthened by throwing a lot of homeless bees among those standing in full possession of their citadel.

A correspondent mentions a case where the bees of two skeps were driven and then united in one. No fighting appeared to him to occur until the third day after, when there was a 'great slaughter.' He is at a loss to explain the occurrence; but had he removed one of the queens, that one not required by the bees would not have been 'balled.' Choosing to leave it for the bees to settle, he had the opportunity of counting the cost, seeing that what was at first simply an attempt to dispose of one queen, presently led, because of the increasing excitement, to a mortal feud between the entire members of the two united (?) forces.

Of course it does not always happen thus, even where several queens may be allowed to remain; but when it is remembered that at the 'first touch' one community of bees will know the other to be queenless, and *vice versâ*, there is no need for such sad accidents to occur.

Though taking this knowledge as the basis of our Instruction to others, we may state that, while never uniting with more than one queen, we do not always find it convenient or desirable in our multifarious operations to wait until the second day before uniting, but the novice will find it greatly to his interest to strictly follow the above directions until greater experience enables him to judge when he may or may not safely unite under other conditions.

USEFUL HINTS.

Weather.—With the exception of a few cold days, bee-keepers in the south-eastern localities have enjoyed splendid weather for rapidly feeding their bees in anticipation of the long winter on which we are about to enter. Snow, wind-storms, and extremely cold nights, in the north and midland districts, have, we fear, interrupted the feeding process. Equinoctial weather, doubtless, but soon, we hope, to be followed by another short summer, affording to the 'Loiter-lag-tardy' school a further chance of saving their bees from starvation. On emergency we have successfully supplied colonies with syrup for winter storage as late as the beginning of November, the weather being favourable; but, as a rule, the sugar-cake should now take the place of syrup.

Winter Preparation must now be our chief care. As soon as feeding is completed it is well to examine all colonies, to change floor-boards, and to reduce the number of frames, if not done before. Strong colonies, which have been rapidly fed, and have stored more food than they require, may spare a comb or two of sealed food for their weaker neighbours, not only without loss to themselves but even with advantage, since confinement to seven or eight combs, instead of the prescribed ten, will enable them to keep up the necessary temperature of the hive at less exertion and expense to themselves. Examination must be made on fine warm days only, and it is best done in the afternoon. As a rule bees cease flying now about two, or, at latest, three p.m., after which there need be no fear of robbing.

Quilts, pervious or impervious (porous or non-porous), seem to be exercising the minds of many at this season of winter preparation. For many years we wintered our bees under woollen coverings, placed on 'tick,' or unbleached calico, next to the frames—often using chaff-cushions over all—and contracted the entrance to one or two inches. But this system almost invariably produced more or less dampness in the hives, and often dysentery and mouldy combs resulted. For the last three or four years we have used the American enamel-cloth upon the frames, with sufficient warm coverings over it, keeping the entrances at full summer width—often extending along the whole front of the hive—and providing a space of two inches below the combs.

The result has been, almost without an exception, dry hives and combs, and healthy bees. The plan which has succeeded so well in our own case we have recommended to others. Upper and lower ventilation have each their advocates, but after carefully reading and comparing, for years, the various reports made upon each system in actual practice, and experimenting largely ourselves, we have not the slightest hesitation in giving our verdict in favour of the system of lower ventilation.

When the internal air in a hive becomes heated, it ascends, and the cooler air from without enters and fills its place, undergoing the same operation so long as the heat continues. But if the heat from the cluster of bees escapes through the quilts, the hive becomes cold, condensation follows, and the whole interior becomes damp. In the former case, where the ceiling is as impervious as propolis or enamel cloth can make it, the heat is retained; and the circulation, carried on by the constant entrance of pure air from without, carries off the foul gases, carbonic acid and nitrogen, which exhale from the cluster above, also the effluvium arising from the dead bodies of bees below, preventing dampness, and rendering the atmosphere of the hive dry and wholesome. These are well-ascertained facts. Hence it is most important that provision be made for a constant supply of cool air into the lower part of the hive, in order to procure a circulation of good and pure air around the cluster. Our own hives stand in outer cases well covered by ample roofs. Hence, to procure this perfect ventilation, we often raise the hive on wedges half-an-inch from the floor-board all round. During the coldest winters, colonies so treated, and covered with enamel, or well-propolised quilts, have wintered perfectly, and always come forth in full health, with hives dry, clean, and comfortable. By no means do we say that bees cannot be successfully wintered under pervious quilts and cushions, but in such case experience teaches that the coverings become sodden, damp, and unhealthy, by the constant absorption of the moisture arising from below. Hence the necessity arises for a change of coverings, from damp to dry, several times during a long winter, causing disturbance to the bees when perfect rest is most needed, and the other evils of imperfect ventilation arising from the non-admittance of a sufficiency of air from below by the contraction of the entrances.

Pollen.—Combs, when old, and heavy with pollen, even if partially filled with honey, should be removed from the hives to the wax receptacles. In the cells of such combs pollen and honey are often mixed, the honey being placed upon the pollen, and this mixture, as winter food for bees, is a fruitful source of dysentery. Combs, old and black with age, heavy with pollen, and the cells reduced in size by the exuviæ of larvæ previously hatched within, should always be discarded. Bees winter best on combs tolerably free from pollen, and the queen delights to deposit her eggs in a clean newly-built comb.

Wax-Extractors.—Many bee-keepers will be anxious, during the leisure season of the winter, to convert their old and useless combs into good saleable wax. We have heard the D. A. Jones's extractor, manufactured by Mr. Meadows, highly spoken of, but have not seen it in operation. The price, *12s. 6d.*, is however, a great drawback, since there are numerous bee-keepers who cannot afford to risk so large a sum on an article about which they know nothing. Our experience of extractors on the Gerster plan is not favourable. They are always getting choked, and our factotum declines to use them. We have found the following plan most successful:—Having broken up the combs, tie them loosely in a bag made of canvas, or what is commonly called cheese-cloth, and place it at the bottom of a pot, caldron, or copper, with a weight upon it to keep it down. Fill up with water, and boil until the wax escapes from the bag and rises to the surface. When all the wax is melted remove the fire from the copper (or the pot from the fire), and when cold the wax will be found in a solid mass on the surface of the water, and the refuse only in the bag below.

In our own practice we use a pole for keeping down the bag. It is cut of sufficient length to reach from the bottom of the copper to the ceiling above. With this simple apparatus the work is quickly performed, the wax is freed from all impurities, and any quantity of old combs is speedily rendered into wax, with the minimum of trouble. At the end of the season it is best to clear up and melt down all comb not required for future use, as it wastes much by keeping, and is often destroyed by mites and moths. Wax generally meets with readier sale even than honey, so much being required for making comb foundation.

If the quantity of wax is small the method recommended by Mr. Cowan may be followed, viz., the combs, when broken up, are placed in a fine sieve, set over a pan of water, and put in the oven. The heat of the oven melts the wax, which falls into the water, and can be taken off in a cake when cold.

Storing Away.—All articles used in the apiary which will not be required before another summer—such as extractors, honey-ripeners, and strainers, feeders, &c.—should be thoroughly cleaned and dried before they are laid aside. Extractors, and all articles formed of tin, are very liable to rust, and are easily spoiled thereby. Hence the necessity of thorough dryness. Hives and frames which have been in use should be scalded, cleansed, and dried. They should also be washed over with a strong solution, either of salicylic or carbolic acids. If such precautions were more generally used we should hear less of foul brood than we do. Spare combs should also be sprayed with the same, and dried before being laid aside. If carbolic acid be used, one ounce to a pint of warm water will form a solution of sufficient strength. Fumigation with sulphur is also advisable.

Varnishing Hives, both inside and out, we like better than painting. When this is done the bees use very little propolis, and the interior is rendered dry and clean. Our hives, as stated above, are inclosed in outside cases, so that varnish for the outside of the hives answers as well as paint; but for hives unprotected several coats of paint are a necessity. For the outside cases, and roofs, we use 'Carson's black varnish,' which dries in five minutes, and forms a bright and glossy surface, rendering all thoroughly waterproof.

Winter Passages through the combs, as recommended in our last 'Hints,' are objected to by some, unreasonably, as we think. They have been long used by most advanced bee-keepers, and are advised by Mr. Cowan. To those, however, who prefer some other method of communication between the combs, he recommends 'that a couple of pieces of wood, five-eighths of an inch square, and five-eighths of an inch apart, be laid across the frames, to form a passage for the bees, and that these be covered with a sheet of unbleached calico. Over all is placed the quilt, or chaff-cushion.' Some mode of communication is necessary, and this is, perhaps, as simple and effectual as any, although we ourselves decidedly prefer passages cut through the combs.

ASSOCIATIONS.

IRISH BEE-KEEPERS' ASSOCIATION.

The Committee met on the 2nd inst. Present, Mr. Millner in the chair, Rev. P. Kavanagh, Messrs. Read, Edmondson, Sproule, Gillies, and the Hon. Secretary. A vote of thanks was unanimously passed to Mr. Cowan and Mr. Raitt for their kindness in judging the honey exhibited by the Association at the Irish Exhibition. The question of the best means of selling this honey was discussed, and the Secretary requested to confer with Messrs. Abbott, the Association's agents, on the subject. Some financial business was transacted.

NORTHAMPTONSHIRE BEE-KEEPERS' ASSOCIATION.

Prize List (July 19 and 20, at Northampton.)—Class I., Section Honey: 1, silver medal, Chas. Cox, Brampton; 2, H. Ringrose, Boughton. Class II., Extracted Honey: 1, Geo. Smith, Boughton; 2, Chas. Cox, Brampton; 3, O. C. Hollis, Boughton; W. Baldwin, Brampton. Class III., Super of Honey in Glass or Wood and Glass combined: 1, Chas. Cox, Brampton; 2, W. Baldwin, Brampton. Special Class: Chas. Cox, Brampton; 2, W. Baldwin, Brampton. Mr. J. Shaw (Moulton Park), Mr. W. L. Bird (Preston Capes), and Mr. J. R. Truss (Ufford Heath, Stamford) were the judges.

Long Buckby Show (August 28).—Class I., Extracted Honey: 1, Mr. Cherry, Buckby; 2, Chas. Cox, Brampton. Class II., Honey in Comb: 1 and 2, Chas. Cox, Brampton. Bees-wax: 1, J. Adams, Buckby; 2, C. Cox, Brampton.

Foreign.

CALIFORNIA.

The honey crop in El Dorado county this year was an average one, being about 50 lbs. per colony. The weather has been extremely warm the past month at Placerville, the mercury standing at 100° to 105° almost every day in August. This hot weather and no honey coming in caused the bees to dwindle down rapidly. At the Placerville apiary I lost forty colonies out of eighty-two.

The Carniolan bees have done the best at Placerville. It is true that they dwindled down considerably, but nothing at all in comparison with the Italians, hybrids, and blacks. I have not lost a single colony of Carniolan bees. They are the best bees to defend their hives against robber bees, of any that I have ever seen. Next season I shall keep nothing but Carniolan bees in the Placerville apiary.

I have two apiaries located fourteen miles above Placerville in the mountains. At these apiaries all kinds of bees do well. I do not see much difference in regard to the amount of honey stored by each race—black bees do as well as the Italians.

Bees gather the spring crop from alders, willows, maples, dogwood, wild cherry and plum, California lilac, manzita, chaparall, folocio, pennyroyal, &c. The fall crop is the largest and best, being gathered mostly from the incense cedar, which is a wonderful yielder of honey. The spring crop averages about 30 lbs. per colony, and the fall crop sometimes averages 100 lbs. per colony.

Bees do not begin to gather honey from the incense cedar until October, and it usually lasts about six weeks. The honey gathered from this source is the thickest that I have ever seen. The bees cap the cells with a snowy whiteness, which gives it a very beautiful appearance. The incense cedar is rich in both pollen and honey, a single tree furnishing enough pollen for the wants of a whole colony.—S. L. Watkins, *Placerville, Calif., Sept.* 10.—(*American Bee Journal.*)

NORWAY.

It was a great disappointment to us Norwegian bee-keepers, that we did not have you with us this year as we had hoped, and I was still more sorry when I knew the reason we did not meet either in Copenhagen or Christiansand.

In Norway, last winter was quite serious to us bee-keepers. I suppose that about three-fourths of all the stocks died of cold and hunger, and this summer has only very little bettered us, because the honey-harvest with us in Norway, as well as in England and America, has been scarce nearly everywhere. However, we will not therefore lose heart, but hope for better luck next year. —Ivan S. Young, *Christiania, September 28th.*

SWITZERLAND.

Having read in your *Conduite** of the use of disinfectants in cases of foul brood, and as this concerns somewhat my profession of veterinary surgeon, I should like to say a few words on the subject in the hope of being useful in the attempt to contend with this disease.

1. Salicylic acid is *anti-fermentative, antifebrile,* and *antiseptic;* it may even disinfect the stomach, but as soon as it *reaches the blood,* it unites with the alkaloids of carbonates and phosphates, and *loses its disinfectant* properties; it then remains only *antifebrile.* It destroys more surely than phenol micrococci and bacteria coming in direct contact, but not through the blood.

2. *Phenol* is not antifebrile, but *anti-fermentative* and *antiseptic; in the blood it loses* nearly all of these qualities. Its disagreeable smell does not recommend it for bees' use. Large animals always refuse to drink any water containing it.

3. *Thymol* has more powerful properties than either phenol or salicylic acid, for *preventing putrefaction* and *fermentation,* and has also an agreeable odour; it is not injurious if taken inwardly, whereas phenol in certain quantity becomes poison.

4. *Camphor* is an *excellent tonic,* but in too large doses causes paralysis; it is *antifebrile.* It is a good antiseptic, but not quite as strong as phenol. It must be a splendid *prophylactic,* that is to say, as a preventative of the disease gaining a footing in the apiary.

Conclusions.—Camphor ought to come in the first place to cure *the bees* of their feeble condition and fever. It may even suffice to disinfect the apiary if the disease is not yet too far advanced.

Thymol will come in the first rank as a disinfectant of the apiary by evaporation, being the most powerful disinfectant of all the four.

Salicylic acid will be excellent for fumigation and to wash the hives; internally in food it is useless as a preservative. It can lower fever in the bee, but wants the tonic of camphor.

Phenol applied internally, has deceived the expectations and is useless for contagious diseases. Externally and coming in direct contact, its disinfectant qualities are admitted.—Albert Aberegg, *Veterinary Surgeon, Nors, Berne* (*Revue International l'Apiculture*).

* *Conduite du Rucher,* by E. Bertrand.—Ed.

JOTTINGS BY AMATEUR EXPERT.

Mel sapit omnia.

The Carniolan Bees. — Mr. Benton. — Queen-raisers' Tricks, and several other Matters.

A friend from Scotland that knows my private address writes to know 'if I have not yet recovered from the effects of Mr. Benton's last "slash" at me.' The fact is, not only have my hands been full of other matters, but I thought I might well leave Mr. Benton's letter in the hands of the bee-keeping public, who have so long been the dupes of queen-raisers.

Wonder who told Mr. Benton I only know a 'tinker's half-dozen' of Carniolans? I fear I know more than Mr. Benton would care for me to tell; he has said pretty much about the bad ways of queen-raisers, but he has not told all the truth yet.

They have a rule in American bee-papers which I wish it were possible to copy in this country. It is to boldly name people that do tricks that are 'fishy,' so that honest men may have a chance to live and trade fairly, and the public may not be cheated. Here is a piece of information that I should like to name the parties that practise such ways. It will make 'Useful Hints' open his eyes when he reads it, I guess.

Large consignments of *virgin queens* are sent to England as *fertile* in late autumn, and are distributed, and the raisers who send them trust to the chances of their being killed in introduction, to hide the truth about them. The few that do survive the raiser replaces, with an apology for making an 'error,' but he has few to replace, as most of us are aware how extremely difficult it is to get a virgin queen accepted in late autumn; and so the British public are gulled not only by getting nothing for their money, but their stocks ruined also by being rendered queenless, and their own tempers spoiled for being such unsuccessful queen-introducers.

But I have been wandering away from Mr. Benton before I had quite done with him; so I wish to 'hark back' to him for a short time. He says all Carniolans are 'banded.' If that is so, I wonder why it is other dealers can supply queens that will not breed 'banded' bees, and are as gentle as their other characteristics are true to the old style of queen.

He still maintains the gentleness of his Cyprians. I suppose he will give us credit for possessing some knowledge of handling bees; and I know of no single disinterested bee-keeper but what gives them a bad name after they have been here a few weeks. The fact is you can never depend on them as being gentle two days in succession.

Api for October came to hand to-day. The Carniolans and Mr. Benton too, are 'cut up rather rough' in it. This is what Mr. L. Stachelhausen, an able German bee-keeper, now settled in Texas, U.S.A., says:—'I have known Carniolan bees since 1868, and saw them in the apiaries of my friends, and have had a few colonies myself. The first Carniolan queen imported into Germany had no sign of yellow blood. . . . Since that time some strange races may be imported into Carniola, and so the Carniolans are more or less mixed.' Later on Mr. Alley, commenting on this letter, says: 'Pure Carniolans show no yellow bands. All the good points possessed by those bees sold as pure Carniolans by dealers are derived from the Italian blood by which it is

evident they are crossed. I do not believe that there are more than two bee-keepers in this country who ever saw *pure* Carniolan bees, nor do I believe there is a pure queen of that race in the United States. I do not care whether Frank Benton sent them here, or whether they came from some other person. If people depend on Frank Benton for pure queens, they will get awfully deceived.'

Bee Flowers. — If 'Apis Hibernicus' will send a stamped addressed envelope to the Editor, I will fill it for him with this year's seeds of 'Chapman's honey-plant.' If he sows them in the spring, and when large enough to handle prick them out where he intends them to flower, they will bloom (D. V.) in the summer of 1889. They are perfectly hardy. 'Canada Thistle' I do not know or cultivate, and my store of *Echinops globosa* is very limited. I will give him a few seeds of *Echinops ritro*, but I cannot always succeed in getting *E. ritro* to germinate, probably they will in the Emerald Isle. 'Apis H.' may ask me for a young plant of *E. globosa* next summer, and if I have one to spare he shall have it. Do not forget to jog my memory, it is like a sieve.

'Buzz' wants me to say something about how to find queens, but as he must not try to find queens till next spring I must defer that as I have already overrun my space.—Amateur Expert.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements.)*

*** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

BEE-HIVES, LONG OR SHORT?

[1832.] I have given a fair trial to both of these, and find the former very decidedly more convenient for use and manipulation.

By a long hive I mean what is often called a Combination hive—an absurd name, as the principle of combining a summer and winter hive in one is now seldom practised—capable of holding eighteen frames on the same level; by a short hive, one that will hold but ten, and whose capacity must be increased by adding one body above another, or what is commonly known as storifying.

I will premise that, in order to get as much work out of the bees as possible, *i.e.* section honey, I keep two points steadily in view:—1. To persuade the bees not to swarm by enlarging the brood-nest as often as may be necessary; and, 2, to keep by feeding and packing up warmly, each stock as strong as possible for the summer campaign.

The first of these I find very troublesome to carry out in a short hive, as a frame must always be removed, and as it were dug out, to make room for a new one; and the second is more easily managed in a long hive, as the extra space behind, when the frames have been reduced to ten, gives ample room for syrup-feeding in saucers, pie-dishes, &c., without the need of any expensive feeder. Of course dry-sugar feeding can be managed with great facility in both.

I find the materials for a long hive cost about 4*s.*, and I can make one in ten hours. I think any village carpenter ought to be able to make one, with a fair profit to himself, for 10*s.*, or even less. The quantities are these:—matchboarding, 50 feet, 2*s.* 6*d.*; 6 feet of 1-inch flooring, 4½*d.*; screws and nails, say 1*s.* 1½*d.*—total 4*s.*, legs are not included.

The dry feeders I use are two; one for use above the frames, an oblong box with sliding lid and large holes in the bottom, 15 × 5 × 2½, holding about 3 lbs. of sugar—this they have at all times, except when the sections are on, to help themselves whenever they feel disposed. I do not think they abuse my liberality, as I seldom find many in the boxes except in bad weather. The other, screw a frame on to a dummy, and make two troughs by adding pieces of thin wood, this holds about two pounds and is placed behind the last frame in spring until the bees go up into the sections.

My section racks I make to cover exactly half of my frame space, 17 × 13½, three sides of half-inch wood, the fourth of very thin wood, or none at all; this holds twenty-four 2-inch sections, or twenty-seven 1¾ inches, the pair therefore taking forty-eight or fifty-four respectively. When one is nearly filled it can be moved to the rear to be finished off and a fresh one placed in front, and so on.

For syrup-feeding I use a float of thin wood with a large hole in centre, with each dish. This enables them to feed without danger of drowning, as they can scramble out if they tumble in. I cover the space behind with a board, which is met by the quilts, that they may not get up into the roof and perish, as they have seldom the sense to go downstairs to find their way back to their rooms.

I use syrup made of white sugar only. I thought one day I would try the brown, but before putting it into the hives I had a small quantity made and put it in soup-plates with floats, in the open air in a corner of the garden much haunted by bees. During the two bright days that it was there it was not sensibly diminished, and I saw scarcely any touching it, though they were in great numbers upon a dry piece of empty comb which I had arranged against the plates to tempt them. This decided me to make no change in their diet, as it evidently would not be popular.—C. C. James, *Papworth St. Agnes, Michaelmas*, 1888.

QUEEN-REARING IN FULL COLONIES, WITHOUT FIRST REMOVING THE BROOD.

[1833.] It is supposed that queens reared at swarming-time are superior to those reared by what is called 'artificial methods.' This point I will not discuss at this time, but will give the results of some experiments which have been conducted in my apiary the present season, in order to induce a colony of bees to build queen-cells without first removing the queen or any of the brood.

On August 15th several of the best colonies in my apiary were put in order, to test this matter of rearing queens in full colonies the same as the bees would do if about to cast a swarm. When it was ready, I found the bees were ready also, and they built the cells just as I expected they would. I must say that I was as much surprised as delighted at the result, to see that my first attempt was a success.

The cells thus built were very large, and the young queens from them are fine and equal to those reared by any method, or by any one. I intend to present several of them to prominent bee-keepers in this country, and have them tested with those reared at swarming-time; others will be placed in my own colonies.

If this new method for rearing queens works as well as it now promises, it will most likely be adopted by nearly all who rear queens in large numbers, as it is the most practical as well as the most economical method yet devised by any one. There is no doubt in my mind that one colony of bees can be kept at work building queen-cells from May 20th to September 20th. There is one colony in my apiary that is now (August 29th) at

work on the fourth set of cells, and the bees seem to take as much interest, and work on them with the same vigour, as they did on the first lot of eggs given them.

One of the best features about this new method is the fact that the bees build no cells except from the eggs given them: therefore it will not be necessary to hunt the other combs over when one set of cells are removed.

It must be evident to all, that this method has a marked advantage over others so long in use, one of the most important of which is in the immense saving in bees, time, and honey, as by this method queens are reared, and in so doing the colony need not be disturbed, except when one frame is put in, and removed, at the time the cells are capped.

Some one will say, 'I thought you did not approve of having one colony build but one set of queen-cells.' Well, I do not in cases where the bees are deprived of the queen and all the brood. You must remember that with the new plan the bees are kept at all times in the same condition that they are in when a swarm issues. Now, if bees are kept in that condition, why are they not ready to rear as fine queens as they would if they had intended to swarm? The queen has the freedom of all the combs, and brood-rearing is not stopped for a moment, and thus the colony is kept up to the highest point of activity at all times.

So far as I have any knowledge, no one has ever reared, or has attempted to rear, queens by not depriving the bees of their queen. I am not quite ready to make public the details of this method of rearing queens, but I shall probably do so at the proper time, and in season for those who desire to test it another year.—HENRY ALLEY, *Wenham, Mass.* (*American Bee Journal.*)

SUCCESS IN BEE-FEEDING.

[1884.] Bee-keepers ought to be thankful for the article lately written on sugars, and where the pure article may be purchased. I find, by reading the *Bee Journal* and inwardly digesting it, it has added to my home-comforts in more ways than one; even this year, bad as it, I am on the right side of the ledger. I have had my share of failures, which have been chronicled in the *B. J.*, but I make every failure a stepping-stone to success. While writing this letter I feel very much in a confessional mood. When I commenced bee-keeping I thought the most expensive things were sure to be the best, how all is changed! I got a mouse-trap at the same time, cost 3*s.* 6*d.*—never caught a mouse yet, believe it never will; then I went in for an expensive feeder, it now keeps the mouse-trap company.

But now to my method of working. In the first place, I don't 'fad' with my bees. Having put the quantity of frames well covered with bees, I put a calico cover on, having previously cut a three-inch hole in centre. I then put on an Excelsior tin-feeder—manufactured by the Tin Plate Works Co., Masshouse Lane, Birmingham—keeping the nozzle in one corner at the back of hive, where the syrup is run in (I keep the feeder on until I see young bees in the spring). I next put on an empty section-crate, then I pack with wheat straw cut into three-quarter-inch lengths between feeder and crate to top of feeder; on Raitt's hives I put a shallow frame on, which is even better than a section-crate. I then place two or three felt covers on over all. For a season such as we have had, I fill reservoir with very warm syrup for about a week, giving it in the evening; after filling I put Symington's prepared pea-flour along the alighting-board, almost stopping up the entrance, in a few minutes the bees make their way through it and are as white as millers, and I am rewarded by their merry hum; I give pea-flour in the day time during the week they are taking the syrup; by acting in this way I save the bees being out in the cold so long. Pollen has been almost as scarce as honey owing to the wet season. Before the winter sets in I place prepared candy in outside circle as much as it will hold, and prefer to do this if even they have plenty of their own stores. I think the change does them good. In the spring, should there be a few hours' sunshine (no snow on the ground) and bees about, I fill reservoir with warm syrup further on: here is the grand secret, I remove cork float and then cut a section or two into two or three pieces, and place in reservoir, and put pea-flour as before. By the above treatment I have early and late breeding carried on.—T. H.

BORGUE HONEY.

[1885.] In the autumn of 1886 I sent all the information I could obtain from Borgue apiarians, and also some particulars of the bee-flora pasture, to that most accomplished apiarian, who has, perhaps, done more to promote successful bee-culture than any other gentleman in Scotland, who is well known in bee-circles under the *nom-de-plume* of 'A Renfrewshire Bee-keeper.' He thus wrote:—'A little actual observation on the spot would soon solve the enigma of what flower the peculiar flavour of Borgue honey is due. It is admitted all round the main element is the secretion of the white clover plant, and at the time it is in full bloom if the district where the flavour is most marked—if I mistake not, about Borgue Village—were visited, and which flowers the bees visit most persistently watched, by pressing out the sweet secretion the "smack" could be caught stronger uncontaminated.'

'A Renfrewshire Bee-keeper' sent my note to the Rev. Mr. Sanders, minister of Tundergarth. I have the authority of the Rev. Mr. Sanders to quote from his reply to 'A Renfrewshire Bee-keeper,' qualified with the remark that enlarged experience and increased knowledge sometimes change one's opinions. The following is an extract from his letter:—'I have read with great interest the report on Borgue. It is very exhaustive so far as information is to be obtained from practical bee-keepers. I think we must discard the conjecture that Borgue honey owes its superiority to the absence of spruce, or to richness of soil, or freedom from contamination. Clover honey in districts where there are no fir-trees is not better than in places where they abound. When pure, it is clear, and has very little aroma, but it is much improved in good seasons when bees have access to meadows and other flowers, that give it somewhat of an amber colour, so it is probably Borgue clover honey *per se* is not richer than our own, and that it owes all its virtues to contamination, to the being mixed with honey of wild flowers found around the west coast of Borgue, and in the unploughed dells and glens. It is not unlikely that honey near the west coast is principally gathered from thyme, and on that account may excel what is got further inland.'

The Rev. Mr. Sanders, in pursuit of further information, wrote to the late Rev. Dr. Cook of Borgue. His reply, which follows, is dated October 7th, 1886, and it will be of general interest far beyond the confines of Borgue:—'I am told by those who have personal experience of bee-culture that the south, south-west, and west of this parish are most celebrated for Borgue honey. The flavour is very delicate, and the honey from those parts of the parish along the Atlantic shore is peculiar in colour, of a very pale and beautiful green. The districts noted are very open, having comparatively little wood, which is held to be unfavourable to the production of honey. They abound in rich and in much old pasture, with abundance of clover, especially white, and are celebrated for the production of cattle as well as of honey. The experienced attribute the delicacy in flavour and colour chiefly to the rich clover pasture. I am told that the honey produced in the eastern and northern portions of the parish, although rich in flavour, wants the peculiar and delicate green of the south and south-west, and perhaps western portions of the parish.

The parish, especially along the cliffs, which extend along the sea-shore, abounds in wild flowers, which possibly may contribute to the peculiar colour and delicacy of the Borgue honey. I wish I could have given you more full information, but I think what I have stated is reliable.'

Rev. Mr. Sanders met a lady, a member of a well-known and highly esteemed Borgue family, who said 'the coast has steep cliffs, indented, and grows natural flowers in the sheltered parts, which are supposed to give the green honey of Borgue its high character. One of the varied and rare plants clinging to the rocks is samphire.'

I venture now to give some of my own opinions on the matter. The choicest Borgue honey is gathered in the centre, south, and west of the parish. The first prize going so far north this year was a surprise, and would not likely happen in a good honey year. White clover, we may take it, yields the main body of the best Borgue honey, very probably influenced by soil and climate; these affect the quality and flavour of butter and cheese, and quite likely have a similar effect on the secretion of the nectaries of flowers. Natural perennial flowers that grow on the untilled knowes (so abundant in Borgue), I am strongly of opinion have a potent influence on the flavour of Borgue honey—thyme probably one of these. The richest flavoured Borgue honey I have yet tasted was of a pale amber colour. I close with the hope that some of our apiarians or florists may steal from the Borgue bees the secret of their cunning blend.—A. M'N. *Greenock* (*Kirkcudbrightshire Advertiser*).

CLIPPING QUEEN'S WINGS, ETC.

[1836.] For seventeen years I have practised clipping the wings of my queens as soon as they begin to lay, or the first time thereafter that I can conveniently find them. And having followed the practice so long I think I have a right to an opinion concerning its advisability. Some writers have presented what to them seem grave objections to the practice, but in my experience the objections have very little foundation. It is by some supposed that the bees are more inclined to supersede a queen with a clipped wing. But this is certainly, according to my experience, a mistake. I have had clipped queens live into the fourth year, and no one can prove that one with perfect wings will live any longer than that. In fact, unless a queen is marked by having a wing clipped or in some other way it is not easy to tell whether she is superseded or not. Queens are often superseded when the bee-keeper knows nothing of it.

The only real objection to the practice is that sometimes in swarming a clipped queen gets lost. I have myself lost a few in that way. But the objection is more apparent than real. I have lost more queens that could fly than those that could not. And in losing a queen able to fly, I have lost, at the same time, an entire swarm of bees. And it is certainly better to lose a queen and keep the bees, than to have bees and queen go to the woods together. Of course, if one uses something like Mr. Alley's queen and drone trap, there is not so much need of clipping a wing of the queen.

Hiving Swarms.—When I am present when a swarm having a clipped queen issues, I find the queen and cage her, and when the swarm is out, I move the hive to a new location, and put in its place the hive I wish the bees to enter. The cage with the queen may be laid on the frames of the new hive, or kept in the bee-keeper's pocket until the bees begin to return. They will sometimes settle, and sometimes not; but in either case it will not be long until they will return to the place from which they came. Thus they are hived without being touched, and without the least difficulty.

But suppose the queen can fly and the bees have settled somewhere within reach! How shall we then proceed? We do not need any sheet or table-cloth on which to place the hive. Anything of the kind is not only useless, but worse than useless. If convenient, put the hive where it is to remain; if not, put it convenient to the place where the bees are clustered. Place a board 12 inches wide, more or less, with one edge resting on the ground, and the other against the front of the alighting board. Now you are ready to get the bees in. If the cluster is on a small branch of a tree that can be cut off without injury to the tree, cut it off, and lay it down a few inches from the front of the hive, and get a few bees started into it, and the rest will soon follow. But suppose they are not on a limb that can be cut off! If they can be shaken off, shake them into a nail keg, or any convenient vessel, and pour them down in front of the hive. If not convenient for being shaken off, a large dipper, a pan, or even a tin cup, may be used. Gently dip off as many as convenient, and pour them down before the hive, and repeat the performance until you get them nearly all off their clustering place. A vigorous use of the smoker will drive the remaining ones away, and they will join their companions at the hive. As soon as the bees are all, or nearly all, in and on the hive, it should be placed where it is to remain.

The practice used to be to drench the bees with water to prevent them from taking wing; but this is wholly unnecessary. It is a serious hindrance to getting them into the hive. Experience proves that a dry bee will go into the hive much more readily than a wet one.

I have but little experience with bees stinging when being hived. If handled judiciously they very rarely sting. But as a precaution against accidents I generally wear a veil. Having established my reputation for courage and fortitude, I can afford to wear a veil all the time when working with bees.—M. Mahin, *Bee-keepers Guide, Bluffton, Ind., June 20th.*

PAPER QUILTS.—THE WEATHER.

[1837.] A correspondent asks if any one has tried the above. I have for several years now, and find nothing could answer better; but would not recommend them to be used next the bees, but after two or three thicknesses of some other quilts—nothing more substantial and better than bed-ticking. I have also tried them round my legs when going a journey by rail, &c., on a frosty night; and especially if your rug and top-coat happen to be safe at home you will find a good-sized newspaper a capital substitute. The weather has for about three weeks been splendid for getting bees ready for the winter; but on Monday, October 1st, there was a slight fall of snow about 6 a.m., and 3° of frost. On Tuesday night there were 9° of frost marked here.—J. W. Blankley, *Denton, Grantham.*

FEEDERS.

[1838.] I am glad to see that 'Apiarist' has called attention to the very defective 'Rapid Feeders' sent out under high auspices and highly commended in your columns. I happened to purchase two from two different makers, and I am bound to say that both were almost equally bad. After being placed in water for several days, they both leaked to such a degree that I would not venture to put syrup into either of them. I am inclined to believe that there is nothing better for those who have any number of stocks than the improved Canadian feeder. A friend and neighbour who has a large apiary, and who recommends this feeder, tells me that one of his hives will take a gallon (?) in a night. But would it not be better to adopt the dry-sugar system rather earlier in the season? The esteemed writer of 'Useful Hints' has hardly given this system, I suspect, the full trial it deserves. If there is the slightest defect at the present time in any of the syrup-feeders, so that some of the syrup is spilt, robbing is certain to ensue at

once. Should the roof of the hive not fit exactly, every bee in the neighbourhood endeavours to find an entrance, and the wasps usually succeed in doing so. I sometimes fancy that a plan might be devised for filling a feeder in the interior from a small door in one of the sides. If any syrup is spilt on the floor of the hive, a general scramble follows. In a few days' absence from home I had a very strong hive nearly ruined in this way. But in dry-sugar feeding there is no such inducement to robbing. If a dry-sugar feeder is put on either side of the hive, the bees will soon store a large reserve, without exciting their neighbours or creating any *fracas*. These feeders, too, can be made at very little expense.

In spring-time, a flower-pot, nearly filled with dry sugar, with a passage made in the centre of the sugar, so that the bees can pass up through the small hole at the bottom, will answer almost any purpose. Mr. Simmins, however, advises that the dry-sugar feeder should be placed near the brood-nest, no doubt in order to stimulate the queen.

I venture to hope that when another season arrives, 'Useful Hints' will give the dry-sugar system a thorough trial, and let us know the result of his experience.—E. Bartrum, D.D., *Wakes Colne Rectory, Essex.*

COMBINATION HIVE.—RIGHT-ANGLED AND PARALLEL SYSTEMS.

[1839.] Why cannot the entrance to the Combination hive be at the *side?* If it started at the corners, and continued for ten or twelve inches along the side, the frames would be at right angles to it, and the advantages, claimed by some, of this system secured as well as those, claimed by others, of having the brood-nest and surplus honey on the same floor. Possibly this is no new idea, but I have never seen it suggested in the *Journal*.—East Kent.

BEE-KEEPING IN GLAMORGANSHIRE.

[1840.] I am pleased to find Glamorganshire astir, while representatives of the east and west are challenging each other and accepting the challenge for coming seasons. Mr. Sims is enjoying the luxury of present success, with a testimonial from the Editor as to the quality of his honey, viz., 'It is the best we have tasted this season.' Now, 'E. G.,' that's hard to beat; it's equal to a first prize at a local show, anyhow. So when 'E. G.' takes the first prize next year, as he is confident he will, he won't be so far ahead after all. Allow me to suggest to 'E. G.' the advisability of joining the Glamorganshire Bee-keepers' Association, when he will be able to meet Mr. Gibbins and Mr. Sims at the County Show in competition for the silver medal of the B. B. K. A.; and I feel certain the Association will be pleased to appoint him local adviser for the district of Pontypridd, where his experience would be of value to the Association, and the present members of the Association would good-humouredly do their best to prevent him taking any prizes. But I wish him every success, and would like to see many more in the county fired with the same determination to go in and win, so that it will really be an honour to take first prize in a local show.—W. Gay, *Cathays, Cardiff.*

NECTAR.

Do Bees Hear?—Swarming and Science.

[1841.] There are many questions pertaining to bee-culture that are not directly of practical utility, but interesting nevertheless.

Have Bees the Sense of Hearing?—This is a matter, it seems to me, capable of demonstration. That bees do hear in some *sense* which answers to the sense in which other animals hear, I have every reason to believe. That bees pay no attention to the ordinary din and clash of the outer world about them, proves nothing at all, for the same is true in a limited sense, with all living creatures.

My grounds are bounded on the one side by a railroad, and from ten to fourteen trains pass by every day. My stock graze in the pasture undisturbed—they rarely ever raise their heads when a train thunders by. The same is true with my bees—they work right along as though all was silent. But if I drop some young bees on the ground, they will find the entrance to the hive if they are in *hearing* distance of the bees at the entrance; if not, they will wander about, crawl into some other hive, or perish in their lost condition.

Sometimes when hiving a swarm, I dip up a cupful of bees, and pour them into the prepared hive; they immediately set up a loud 'roar,' and the swarm promptly *answer;* and they rush into the hive with that joyous hum which thrills the heart of the true lover of bees with joy, that is difficult to describe. Do you say that *vibration* guides the bees, and not *sound?* What is 'sound' but an impression made on the *subject* by concussion or vibration of the atmosphere?

To say that sound is not the same thing identically to the insect that it is to animals of higher order, proves nothing, because it cannot be proven that sound is precisely the same thing to the lower animal that it is to the intellectual being. Bees *hear* in a sense which answers all their purposes, and this is all that can be said of other animals.

Selecting a Home before Swarming.—This is an old doctrine. It has age on its side. It had its origin away back in the ages of bat-eyed fogyism as pertains to bees. There is such a touching story here, about the sending out of 'scouts' to locate a future home while the swarm waits with patience and hope. There are among these 'scouts' some good Joshuas and Calebs—they will bring in a good report.

It is hopeless, perhaps, to try to be an educator along this line. Mr. Youngman, on page 567, publishes a case of 'sending out scouts,' which appears conclusive to him. But to me it is easy to see what attracted those bees which he took for scouts, 'cleaning out a new home.' The 'chunks of propolis and fragments of comb' adhering to the hollow tree is what attracted the bees there. They were foraging for bee-glue, and doubtless they unwittingly answered as a decoy to the homeless swarm as it passed that way. I once saw a swarm enter an empty hive in my apiary, directed there by the same cause.

No evidence that will bear investigation has ever been published, to warrant the belief that bees locate and 'clean up' a home in advance of their taking actual possession.

Honey is not Digested Nectar.—Since writing the above items the *Bee Journal* has come to hand, and Prof. Cook's reply to my article on page 568, has been noted. I am as much astonished and grieved at the Professor's reply, as he was surprised and pained because of my article. What have I said against 'true science' that justifies the heated and spontaneous defence of Prof. Cook? No man has a higher appreciation for what 'true science' that has done for the 'nineteenth century' than myself. But vagaries and absurd theories are not science. Against these (not true science) I hurl ridicule, because no other weapon can reach them. True science is not the child of one father nor of one 'mother,' hence the 'base ingratitude' which so *stirs* the Professor is a thing of his imagination.

Yes, 'there are more things in heaven and earth' than I ever dreamt of, and the remark is true when I apply it to my honoured friend, Prof. Cook, or to any other living man; but I am pretty certain that no man can lift himself by the straps of his boots.

Our learned author says, 'that honey is more or less perfectly—(what words are these?)—digested nectar is as certain as the world is round.' This is at par with his dogmatic assertion that, 'bees never hibernate.' The one as well as the other rests alone on his *ipse dixit*.

'That all honey is equally digested is very likely not true.' Yes, I should think so; and it is a thousand times more safe—more in accordance with the evidence, with reason and common observation—to say that it is not *digested* at all in the meaning of that word when applied to the assimilation of food in the stomach.

I have before me a fancy little card, "Why Eat Honey?' sent me by that shrewd and practical apiarist and honey-dealer, Chas. F. Muth. I quote from it as a sample of good common-sense:—'What is honey? It is a vegetable product, not made, but gathered from the nectary of flowers, where it is secreted according to the rules of Nature's laboratory.' These common-sense words whet the appetite for honey, while Prof. Cook's 'more-or-less-perfectly-digested' vomit makes every fibre of my being recoil.

I am not able to make the large reports of great yields of honey as some bee-keepers seem able to do—perhaps my locality will not admit of it; but I had one colony of bees to gather and finish up 300 lbs. of the finest quality of honey in less than thirty days. The density of raw nectar varies so much that it is hard to say how many pounds of raw nectar that 300 lbs. of standard honey would represent, but certainly not less than 600 lbs. of freshly-gathered nectar. Now I say that it would be as impossible for a colony of bees to digest (assimilate) in their stomachs 600 lbs., or even 300 lbs., of raw nectar in less than thirty days, as it would be for Prof. Cook to lift himself by the straps of his boots.

The presence of invert sugar in honey argues nothing. Chemical changes going on during the process of evaporation are sufficient to account for that.—G. W. DEMAREE, *Christiansburg, Ky.*—(*American Bee Journal.*)

WINTER STORES.—IF SUGAR IS USED IT MUST BE FED EARLY.

[1842.] In the last *Review* Prof. Cook says: 'We know that sugar syrup is safe' for wintering. I arise to remark that last winter my bees were supplied almost entirely with that article, having been fed 2800 lbs. of granulated sugar, and they made the poorest stagger at wintering that they have in a number of years. I am not calling in question Prof. Cook's veracity, I am merely stating a fact, and I do it, not to pick a quarrel with the Professor, but to show how careful we need be to avoid misunderstandings, and how difficult it is to draw conclusions that will always hold good, when the bees are allowed to have any hand in the matter. It is probable that Prof. Cook is correct that sugar fed at the right time and in the right way is always a safe food. If I had from experience learned that the source from which my bees obtained their winter stores was such that I could with some degree of assurance consider such stores unwholesome, I should extract and feed sugar syrup. Or if, for any reason, my bees were short of stores, obliging me to feed for winter, I think I should, as I have done in the past, feed sugar syrup. And before going farther I will say that the mortality among my bees last winter, I think, would have been equally as great if the best honey had been fed in the place of the sugar. I say I think, for I cannot be entirely positive about anything connected with bees, as I have already hinted. I did not feed till very late, hoping that a flow of honey from fall flowers might help to fill up; and I very much doubt if a colony, entirely destitute of stores, and then fed as late as October, will ever winter perfectly in this climate.

After a good deal of experience in the matter, I would advise any one who thinks his winter stores unwholesome, to try extracting and filling up with sugar syrup, but I would strongly advise that the feeding be done early. Just how early may vary with the latitude. In this latitude—42°—I should like to have the feeding all done in August; later than this, I am afraid the bees do not have time to properly ripen it.

As to taking away wholesome honey—and allow me to say that I think unwholesome honey is not so very plentiful—and feeding sugar in its place, that is another matter. It may be profitable if sugar is low and honey high enough, and time not too valuable. Allow me, however, to mention some objections, for I imagine that the favourable side will be fully enough presented. The editor and others will tell you that pollen, as clearly shown by scientific analysis, is at the bottom of the wintering trouble, therefore take away everything and feed pure sugar syrup, and wintering bees is as safe as wintering horses. But who that has followed this teaching has wintered with unfailing success? I have seen colonies that starved with abundance of pollen in the combs easy of access, with no sign of diarrhœa, and I have never seen any satisfactory explanation of this, if pollen is so disastrous in its effects. I need not tell you of the labour of feeding, although I have tried to reduce it to a minimum, and have no great difficulty in getting a colony to take twenty pounds in twenty-four hours; still the word 'feeding' in my family is heard with no little unpleasant feeling. Then I have found it difficult to strike the happy medium as to consistency. Sometimes the syrup granulates in the cells, when, so far as I know, there is just the same amount of acid as at other times, when it seems to attract enough moisture to run out of the cells. If you feed sugar syrup, there is danger of your yielding to the temptation to wait longer than you should in the hope that the bees may fill up from late flowers. Better feed up early enough, and then if a flood of late honey should come, you can extract again. I do not say how much, but at least some weight should be given to the objection that a pound of sugar fed to bees helps just so much to raise the price of sugar and lower the price of honey. If you are inexperienced you may gain a considerable amount of experience in a short time by starting the bees at robbing when feeding at a time when they are not gathering from the fields.

In spite of the real gain there may be in having all the light honey stored in sections, and having the bees winter on cheaper stores, it is not at all impossible that I may go back to the old plan of allowing eight frames in the hives at all times, and encouraging the bees to keep these heavily provisioned with stores of their own gathering.—DR. C. C. MILLER, *Marengo, Ill., Aug. 27th.*

SAGACITY OF INSECTS.—If we were better acquainted with those insects that are formed into societies—as the bees, wasps, and ants—we should find that their arts and improvements are not so similar and uniform as they now appear to us, but that they arose in the same manner (from experience and tradition) as the arts of our own species, though their reasoning is from few ideas, is busied about fewer objects, and is exerted with less energy.—DARWIN.

Echoes from the Hives.

Denton, Grantham, October 4th.—Not having seen an echo from this part of late, I send you one. There has been no exception here from the general state of things elsewhere, feeders, food, and starving bees, instead of honey for sale and where to find a market for it. We in this part will have no trouble under that head this year. All the same, allow me, though late in the day, to thank Mr. Woodleigh and 'Beeswing' for telling us how they successfully send 1-lb. sections by rail (1717

and 1719). Such knowledge is sure to be of service sooner or later; though with but a few exceptions all my honey has been sold at home, as I believe in a home market. Also allow me a line to apologise to Mr. 'Sherborne' for charging him wrongfully—my memory was at fault. Never were my bees in such condition for storing surplus honey as this year. It was, indeed, a sorry sight to see hives crowded to excess with bees, abundance of honey-yielding flowers on every hand, but withering away one after the other without scarce a visit from our bees. Of course I feed in spring to get bees in condition, but not in summer—no, not whilst the honey-glut is on. No! plenty of mouths to feed without stimulating for more. The weather took up just as the limes came in, and the bees got about a ten-days' run and gathered a nice lot for winter stores, but not quite sufficient. After they failed I fed up quickly on good thick syrup, made from pure granulated sugar, having previously reduced space to what the bees could well cover. An empty tomato or apricot preserve tin, with a round wood-float, and about six inches of pantile lath fastened on top to keep the quilt from lying flat on top of tin is as good a feeder as can be, and holds about two pints: set on the top of frames and cover down warm. These are the times to economise. Never buy what you can make yourself. Cost of feeder like the above—nothing! I began feeding on the day the weather took up in earnest, about 7th of September, and had all finished and packed away snug by October 1st, that means far more than can be pressed into an 'Echo.' All sections, separators, frames, crates, &c., thoroughly free from propolis, &c., wrapped neatly in paper and stowed away in a dry, cold place. Extractor thoroughly cleaned and dried, feeders ditto, all, or nearly so, by October 1st. I have not been idle, as the only time that I have is at night, after six p.m. In every bee-keeper's hut there should hang this motto, to be put in practice—'Never put off till to-morrow what ought to be done to-day.' I fear hundreds of cottagers about here will lose their bees this winter. Many are nearly destitute of stores. One cottager here lost all his swarms, about five. 'Did you feed them?' I asked. 'No, I never bother,' and so they die. What a pity! says—A LINCOLNSHIRE NOVICE.

Keswick, Cumberland, October 6th.—I am not able to send any better account from the Lake District than those which have been so general and gloomy, all through the past season, from other parts. The season here has been an entire failure from beginning to end. I only took about 30 lbs. of extracted honey, and no comb honey in a saleable form. Through the weather being a failure I find my stocks much stronger than they usually are at the close of the honey season, in consequence of their not having had to make long flights; this in some seasons is the means of reducing their numbers nearly one-half; when this is the case it puts them in a poor state for facing the winter. At the commencement of the season I went in for the non-swarming system of management, but when the time came the bees only made sport of me and my non-swarming practice; extra space in the hive made no difference, swarm they would; and, worse still than that, several of them bade me good-bye, and I have not heard of them since, but have an idea where they went to, as scores of swarms have gone to the same place. This is a gentleman's mansion at the foot of a mountain about half a mile away. During the first week of the fine weather we had in September—it put new life into the bees—heather seemed to be exhausted on the hill-sides at a distance, but they were able to work on some plant, as they brought home and stored a good quantity of honey after I had taken off the sections, which added greatly to their winter stores. They were so anxious to make the best use of the last opportunity, that scarcely a robber was to be seen, though they had been very troublesome before. It has been a splendid time for feeding. I gave eleven stone of sugar liquid in less than a week to sixteen hives. Since October came in we have had a very severe change in the weather, it has been nothing but snow and frost all through the week, and scarcely ever a bee on the wing. Snow is still lying thick on some of the highest hills. I heard a farmer say the other day that we have had snow eleven months out of the last twelve. Let us hope for something better in 1889.—R. P.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

ALFRED WILSON.—*Queen Fertilised, or not?*—A dissection and microscopical examination of this queen conclusively shows that she had been fertilised, the spermatheca containing large quantities of spermatozoa; an examination of the ovaries, however, showed them to be atrophied, leading at once to the conclusion that she was old and exhausted, and the inability to lay more eggs probably led to her expulsion from the hive as described. The workers appear to be healthy, so far as can be ascertained from an examination of the contents of the abdomen.

INQUIRER and J. W. ABBOT.—*Bee Flower.*—Both the flowers are the Giant Balsam. This plant is a very ornamental autumn garden flower, and is also much valued as a bee plant.

JOHN PEARSON.—*Uniting.*—Your letter has suggested our Editorial of this week, and we think a careful perusal of it will enable you to solve your difficulties.

JOHN STUART.—*Lincolnshire* has always had the repute of being a honey-yielding county. There is no bee-keepers' association, we regret to say, in the county at present, but the former hon. sec., Mr. R. R. Godfrey, Grantham, will be pleased to give you every information you require.

ATOM.—*Feeding.*—If your bees are healthy they require no ingredients in the syrup beyond those given in Cowan's *Guide*. You should give each stock thirty pounds of syrup. You can do nothing to urge them on to feed up quickly beyond covering them up warmly.

X. Y. Z.—*Packing.*—Sawdust well dried will do, but it is by no means so good as either cork-dust or chaff. It can also be used to fill trays.

L. W. R.—1. *Queen.*—The bee sent is a black queen. 2. *Large Insect.*—Queen wasp. 3. *Winter Stores.*—The sealing of winter stores depends on the consistency of the syrup fed, the temperature of the air, and the strength of the colony. You might reasonably expect to find a good bit done in a week or so. 4. *Winter Quarters.*—Leave your bees in their present positions.

R. PHILIPSON.—*Dead Bees.*—With the information given we should say this is a case of starvation.

BEE STING.—1. *Feeding.*—It is getting late to feed with syrup, but you may even yet get them to store more by giving it to them in the evening as warm as new milk. We should not care to risk them on the small quantity they have stored. 2. *Packing.*—Five frames of sealed food and two empty combs for the bees to cluster on should do nicely. Pack up warmly now so that you can remove the feeder, and cover the feed-hole without having to disturb the bees. 3. *Swarming next Year.*—We are unable to forecast this.

CORRECTION.—Page 488, col. 2, line 1, *for* bi-carbonate *read* bi-chromate.

THE BRITISH BEE JOURNAL

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Editorial, Notices, &c.

'NIL DESPERANDUM.'

We are right in presuming that the bulk of our readers in Great Britain are amateur bee-keepers, who do not depend upon honey-raising for a livelihood, therefore to the majority, first, a few words of comfort may be fitly addressed now that the season 1888 is ended.

One of the great recommendations of this pursuit, one of the principal reasons for the growing popularity of our hobby, has been that *it pays*: this has been proved over and over again, the question has only been one of doubt as to whether or not one could, in our fickle climate, devote the whole time to bee-keeping and obtain a living by it. On this point the consensus of opinion is that bee-keeping should be combined with some other occupation, such as fruit or poultry farming; alone it could not be recommended. The occurrence of a disastrous succession of fruit, clover, and heather crops, such as we have experienced this season, but adds weight to the advice we have repeatedly given in these columns in answer to inquirers who have thought of making a business of bee-keeping *per se*. Keeping bees will then pay, because we have more strings than one to our bow, and a single bad honey season does not mean disgust followed by collapse.

> 'Tis not in mortals to command success,
> But we'll do more, Sempronius: we'll deserve it.'

So let those with whom our bee-keeping is but an agreeable pastime, a true labour of love, take heart of grace, and, with true British courage, fight the harder the more we seem to be surrounded with difficulties. It is only by such an exhibition of pluck that we can show our so-called love for bees and bee-culture to be a sterling feeling and not an empty sentiment, lasting only so long as the *couleur de rose* of the hobby—only so long as lasts the golden light gleaming through well-filled honey-jars.

Quite a number of proverbial sayings spring into the mind when we urge our readers to have 'a patient continuance in well-doing;' this, by the way, being only a more ancient way of telling us that 'Everything comes to him who knows how to wait.' (We will allow the cynic to get in his jeer edgeway, that 'whilst the grass is growing the horse is starving.') We have often found 'the darkest—the coldest hour, the one before the dawn;' we have found, too, the mere *effort* to 'take arms against a sea of troubles,' as Shakespeare tells us, 'and by *opposing* end them.' Who has not felt braced up by a firm determination to get comfort out of disaster by sheer force of will? Why, the oldest amongst us—old stagers, the steady coaches whose wheels have placidly revolved with the years in an uneventful round of monotony — the monotony of mere routine, these can remember how many of the happiest passages in life have been developed and perfected when there has been no single gleam of hope on the horizon, all dark and dismal everywhere.

Be sure we may find much pleasure in sympathising with such of our fraternity as have found the year's transactions a loss, all too keenly to be felt perhaps; we can try to infuse into them a little of the spirit of Mark Tapley, who played 'Away with Melancholy' on a one-key'd flute. We recently saw a couple of bee-keepers returning from the moors with a waggon-load of hives, plodding through a drenching rain for eight miles on a black-dark night; one of them wheeled a broken tricycle, and both were as happy as sand-boys, wet to the skin as they were, bringing home a dozen hives from which they had not taken a single pound of honey during either clover or heather harvest—on the contrary, they had been forced to feed the bees. England is not in danger (not even of a decline in bee-keeping) so long as we have hearts of this mettle in our midst. Truly, nothing can damp such ardour, and a mishap only makes them 'thankful it's no worse,' sheer animal nerve carries them through breakers into the smooth waters of contentment.

Our warmest sympathy is offered to those in the trade who have pluckily launched out in the effort to live by combining bee-keeping with the making of appliances used in the craft. These have had blows with a two-edged sword:—their own bees have earned little or nothing, and there has been very little demand for hives, sections, extractors, and other requisites of the bee-garden. It would be, we believe, a recompense to the trade, if those who have the means would, next season, purchase, instead of making for themselves, such articles as they can. The goods are now-a-days very cheap and well made; competition has given us many things at low rates, so that it would pay us in the

long run to keep the competitors in the field until brighter days come, as come they must, when they and we may be repaid for the privations and pinches one has to put up with in such a year as 1888.

THE PAST AND FUTURE.

After such a summer (?) as the bees have passed through, it behoves every bee-keeper to see that a disastrous season is not followed by an utter collapse of his army of workers—workers who, unfortunately, have not had the opportunity to store either for their masters or themselves.

Already we hear of many stocks dying of starvation, and not a few skeppists declare their intention of feeding no more, as they have already fed all the summer in the hope of a turn for the better, and now the bees must go to the wall. Of couse this is only false economy with sugar at present rates. Take, for instance, a common skep, well stocked with bees, and hardly an ounce of food. Rather than let them perish, suppose we give them fifteen pounds of syrup, which, at the outside, will cost not more than three shillings. With a fair prospect of wintering, the following season such stock will be worth at least fifteen shillings, without counting its swarm, and almost certain crop of honey. Is there any question about feeding being a good investment?

The oldest bee-keepers do not remember such a honeyless season as we have just experienced, and it is more than probable that the present generation may not see another such. Apiaries of fifty to one hundred colonies have not given a surplus in total of one hundred pounds; skeps have been 'taken up' by the score, and not half-a-dozen pounds of honey have been secured. Many bee-keepers have had to feed through the summer, while it has been the exception to find some favoured locality or apiary where the bees have managed to get a living all the time. Such we know of where a small surplus has been given, and some stocks have even stored themselves for winter during the warm spell of weather experienced in September.

The past summer has been remarkable in that not a single honey-glut occurred while the main crops were in bloom. We have, of course, experienced poor seasons, but with the present exception we do not ourselves remember when there was not at least one honey-glut, whatever the prevailing weather may have been.

There can be no question but that bees will be more valuable next season; neither can there be any doubt that in the future honey will command a better price than has ruled for the past year or two, more particularly as American producers have also to complain of a very short crop. It will be remembered that the Americans tried a few years back to swamp our honey market, and more recently the Canadians attempted to establish a demand for their produce. Both ventures have failed, not simply because the efforts put forth were premature, nor that there was no market to supply, but because the producers of neither country were aware of the fact that their own home-markets were not, and never will be, over-stocked with this article when offered in its purest and most attractive forms.

AIDS TO SUCCESS.

Having regard to our concluding sentence in the foregoing article, we must confess that there is free scope for honey-producers in this country, notwithstanding we are writing at the close of the most disastrous season on record. We have already shown that prices will improve for another year, but the present experience will not be lost in other ways. Greater economy will be induced, the apiarist will pay more attention to the breeding of his stock, and will want to find why one apiary did fairly well while a hundred others were in a starving condition. Was it because of any peculiarity in the location, in the surrounding crops, in the management, or, what is more than likely, in the strain of bees employed?

We base our calculations upon the latter, and while we consider that the production of honey should be a profitable undertaking, we do not hesitate to say that success or failure depends almost entirely upon securing the right kind of bees for the purpose—a strain that will gather and store honey even in such a season as this has been. Of course a suitable locality is another great point; and before extending his plant, the bee-keeper who determines to increase his business should consider well whether he is in the right situation to warrant him in doing so. It is not simply a question of good honey flora, or of shelter for the apiary. A man may struggle on for years with his bees often too late for the first honey-flow of the district, finding out at last that there is a scarcity of pollen in his district. This item is of far more importance than is generally supposed, for unless a colony has its combs well stored with it, the spring will arrive with stocks dwindling away, while had they a good store of pollen young bees would have been hatching out by thousands.

The bees which answer better than any other pure race are without doubt Carniolans, and when crossed with natives, we get workers combining the good qualities of both races with superior working capabilities. Unlike the hybrids produced by crossing blacks with Ligurians, the introduction of Carniolan blood into an apiary renders the disposition of the resulting crosses more amiable than that of the natives.

We have repeatedly recommended the introduction of these bees, judging from our own experience that the few shillings expended upon a good queen is about the best investment a bee-keeper can make.

Apart from the fact that there is greater comfort in handling them, we do not lose sight of their excellent wintering qualities, having known them to come out in spring stronger than when covered up before winter, while, when crossed with blacks or Syrians, we secure the bees which store while others may be starving. This is no bare statement, but the result of knowledge gained from a considerable experience is here presented to the honey-producer of the future.

THE WEATHER.

Most bee-keepers will admit that one of the greatest hindrances to the bees gathering stores this season has been want of sun. Our readers will therefore be interested in the following extract from the *Daily News* on the sunless summer we have this year experienced:—

'The publication of the last weekly report of the Meteorological Office enables us to review the weather of the season with regard to the prevalence of bright sunshine. Taking the past thirteen weeks as a whole, it would appear that the total amount of this most essential element has been very deficient in all parts of the country with the exception of Ireland and the north of Scotland. In the former of these regions, the aggregate duration of sunshine has not been more than from 2 to 4 per cent. less than the average of the previous eight years; while, in the north of Scotland, it has actually been 11 per cent in excess of the normal. Over England, however, matters have been very different, the deficiency varying from 20 per cent in the north-western district, including North Wales, to 28 per cent in the north-eastern and midland counties, and to as much as 34 per cent over the southern and eastern counties. Over all the more central, eastern, and southern parts of England, in fact, the sun has not shown on an average for more than from four to four and a half hours per day, instead of a possible fourteen or fifteen hours. In Scotland the daily average has been about five hours, and in the Channel Islands about six. A comparison with the brilliant weather of last year gives some very striking results. Over England generally the quantity of sunshine registered during the season which has just elapsed has been little more than half the amount recorded a year ago. In the eastern counties the average daily amount this year was 4·3 hours, against 8·5 hours last year; and in the southern districts 4·3 hours against 8·4. Owing to the marked absence of sunshine, the deficiency of heat noticed during the past summer has been relatively much greater during the daytime than at night. In London the mean of the midday readings for the entire period has been more than 4° below the average, while the deficit in the night values has not amounted to as much as 1°. Notwithstanding the general coolness of the season, the absolute minimum temperature, or, in other words, the lowest reading observed in London on the coldest night, has been higher than any similar value recorded during any summer since the year 1873. During the past three months the thermometer has not descended below 43°. Last year the summer, although so fine and warm, gave us a minimum temperature of 39°, while in the summer of 1880 the sheltered thermometer on one occasion fell as low as 35°.'

Reviews.

VOORDRACHT OVER DE OORDEELKUNDIGE BIJENTEELT, *door Karel De Kesel, Brussel.*—During the last year or two bee-keeping has taken a start in Belgium, and owing to the interest taken by a few leading men modern methods are coming into vogue. The *Revue Internationale* has for some time had a considerable circulation, and many copies of our *Guide-book*, translated by M. Bertrand, have been sold, and latterly his *Conduite du Rucher* has been eagerly sought for. All this shows that a real, earnest endeavour is being made to improve bee-keeping in Belgium. These publications are all, however, in French, and, as most of our readers know, every one in Belgium does not speak or read French, so that they are of no use to a large number of the inhabitants. Flemish or Dutch is spoken by these, and in order to bring modern bee-keeping before them the above work by M. Karel De Kesel has been prepared. It does not treat of bee-keeping as a guide-book, but gives a general account, or report, of the modern methods, and the great advantage to be derived from the proper use of moveable comb-hives over the old-fashioned straw skeps. At the end of the work there are four pages illustrating the hive recommended by M. De Kesel. This is a double-storey hive with frames 44 cents. by 28 cents. for the body, and a slightly shallower frame for the upper storey. The hive is of wood, covered outside with straw, and over the top there is a sloping roof. The frames are made to slide in at the back like in the German hives, and they are kept the right distance apart by nails driven in the top bar near the ends. The moveable back forms the fourth side of the hive, and is pushed up to the frames. It has a roll of felt tucked in all round to keep all warm. These hives can be placed on shelves one above the other and their contents examined from behind. Between the two storeys there is an adapting-board, with an oblong hole in it to allow the bees to pass up. Although this is a great improvement on the straw skep, we wish M. De Kesel had gone a little further and adopted a hive opening from the top, which presents many advantages over the one he has selected. Manipulations are much easier, and enlargement of the hive to the full force of the colony may be effected without limit. M. De Kesel is doing a good work, for he travels the country, being employed by the Government to give lectures on bees. With him he has a van containing hives, appliances, and different races of bees. These form an exhibition, and in every village he visits they are used to illustrate his lectures. This little work, which was felt to be a want, will bring the knowledge of modern systems of bee-keeping within the reach of all, and we wish it every success and a large sale.

BEE-KEEPERS' GUIDE, OR MANUAL OF THE APIARY. By A. J. Cook, Professor of Entomology in the Michigan State Agricultural College.—We are pleased to welcome this the thirteenth edition and fifteenth thousand of Professor Cook's *Manual*, which first made its appearance as a modest pamphlet in 1876. So much was this at that time appreciated that it sold rapidly, and Professor Cook has from time to time enlarged it, until it has grown to contain nearly 450 pages. In the present edition there are 110 added pages and 31 illustrations; and it has been in a great measure re-written, to bring it up to the knowledge of the present day. Not only has the Practical part been brought up to the present time, but also the First part—treating of the natural history of the honey-bee—has had full justice done to it: for the works of Schiemenz, Schönfeld, and others, have been mentioned, and the reader is made acquainted not only with the progress made in the science connected with bees, but also with the names of those to whom we are indebted for the discoveries. Just fancy any one writing about Parthenogenesis, and not mentioning that to Dzierzon we owe its discovery in connexion with bees made in 1835, and published by him in 1842; yet hard as it is possible to believe it, an author has recently done so, and only mentions Dzierzon casually in connexion with the introduction of the Italian bee in 1853, which enabled him to *prove* his discovery to be true, yet never once is he mentioned as the discoverer. This is the way many books are made! So conscientious is Professor Cook in acknowledging where he gets his information and giving due credit, that in the preface he even mentions where every woodcut is taken from; and this is in striking contrast to the ways of compilers of the present day, who copy right and left without even so much as alluding to those from whose works they copy.

It is in the first part of Professor Cook's *Manual* that we find most of the additions, and it is here that it contrasts favourably with Vol. I. of Cheshire's work. In referring to Cheshire's book, Professor Cook has discovered—although perhaps he is not the first—that this

is a compilation; and says that 'many of the pages and illustrations are taken bodily from such writers as Schiemenz, Girard, Wolff, &c., and, we are pained to say, generally without any credit whatever. The author gives as original many views which others have previously advanced; and worse, his quotations—unmarked quotations—show that he knew he was claiming what was rightfully another's.' Those who have Cheshire's work have only to compare, for iustance, pages 149 to 151 and 200 to 205, with Girard's pages 56 to 58 and 89 to 93, to judge for themselves. The same applies to many of the illustrations, and it is funny that in one of these Cheshire commits the same error he so severely criticises in Cook's eleventh edition. The sections on Plate III., although nothing is said of this, are taken from Wolff's monograph; and in copying Section F it has become reversed, so that the hairs are to the left side, whereas in Wolff's (Plate IV., fig. 31) they are to the right, otherwise they are identically the same. Another curious error is made when he is copying from Dujardin—although his writing would lead one to suppose it was original research—the sizes of the brains of insects. Dujardin gives the sizes in letters, and states that in the red ant the brain is '*deux cent quatre vingt sixième*,' or $\frac{1}{256}$th part of the whole body. Cheshire gives it as $\frac{1}{216}$, and this in French would be '*deux cent quatre vingt seizième*,'—an error easily committed by a person not thoroughly conversant with the French language.

Looking through the book before us, we find, amongst other things, that in writing about the races of bees Professor Cook appends the following chart, which he thinks represents pretty accurately the species, races, and varieties of the genus *Apis*.

Species.	Races.	Varieties.
Apis Indica, Fab. Apis florea, Fab. Apis dorsata, Fab.	A. dorsata nigripennis, Latr.	
	A. dorsata bicolor, Klug.	
	A. dorsata zonata, Smith.	
Apis mellifica	A. mellifica nigra. German bee.	Carniolan or Krainer.
		Heath.
		Austrian.
		Common black.
	A. mellifica fasciata. Egyptian bee.	
	Syrian?	
	South Palestine?	
	Cyprian?	
	Italian?	
	Greek?	
	Bonnat?	
	Caucasian?	
	China bee.	
	A. mellifica unicolor, Latr. Madagascar.	
	A. mellifica Adansonii. African bee.	

Where a race is followed by an interrogation point, there is a question if it should not be considered a variety of the last preceding race not thus marked. He thinks possibly through the law of variation each race might have originated independently, or possibly all—such as Italian, Cyprian, Greek, &c.—as varieties of the Egyptian bee; although Vogel considers, after a long series of experiments, their origin is a cross between the yellow and black races.

In Chapter II. The Anatomy and Physiology of Insects, and the Honey Bee in particular, are treated. Here we find many new illustrations, and much fresh matter. Describing the antennæ, he agrees with those who, like Leydig, Erichson, Hauser, and others, consider these the organs of smell, and tells us that 'while Erichson first discovered the pits in the antennæ, Burmeister discovered the sensitive nerve-ending hairs at their bottom, and Leydig the perforated pegs or tooth-like hairs.' Further, he says, 'We may state, then, that the antennal organ of smell consists of a free or sunken hair-like body, which opens by a pore or canal to a many-nucleated ganglionic nerve. We thus understand how the bee finds the nectar, the fly the meat, and the drone and other male insects their mates. That the antennæ are organs of smell are generally admitted, but some have from time to time endeavoured to show that they also contain the organs of hearing. Taking this view, we find Dr. Braxton Hicks, Graber, and Mayer, but the evidence they bring forward is not sufficient to satisfy scientists that these depressions are really organs of audition. This also is our view, and is the one taken by Professor Cook, for he says, 'Mr. Cheshire speaks of small pits in the antennæ, which he regards as organs of hearing. He gives, however, no proof of this, and the pits that he describes are not at all ear-like in their structure. Dr. Packard says that there is no proof that any insects except crickets and locusts have real organs of hearing. He here refers to the ear-like organs situated on the sides of the body of these insects. Dr. C. S. Minot, in reviewing Graber's work, says that it has not been demonstrated that even these tympanal organs are auditory, and adds that all attempts to demonstrate the existence of an auditory organ in insects have failed. That insects are conscious of vibrations, which with us cause sound. I think no observing person can doubt. . . . Every apiarist has noticed the effect of various sounds made by the bees upon their comrades of the hive, and how contagious is the sharp note of anger, the low hum of fear, and the pleasant tone of a new swarm as they commence to enter their new home. Now, whether insects take note of their vibrations as we recognise pitch, or whether they just distinguish the tremor, I think no one knows. There is some reason to believe that their delicate touch organs may enable them to discriminate between vibrations even more acutely than can we by the use of our ears. A slight jar will quickly awaken a colony of hybrids, while a loud noise will pass unnoticed. If insects can appreciate with great delicacy the different vibratory conditions of the air by an excessive development of the sense of touch, then undoubtedly the antennæ may be great aids. Dr. Clemens thought that insects could only detect atmospheric vibrations. So, too, thought Linneus and Brunet. From our present knowledge this view seems the most reasonable one, for nothing answering in the least to ears, structurally, has yet been discovered.' We are ourselves inclined to the same view, and do not see any reason why bees should not be sensible to vibrations which produce no effect upon us. Our ear is so fashioned that it is sensible to vibrations reaching at the outside to 38,000 in a second. The sensation of red is produced when 470 millions of millions of vibrations enter the eye in a similar time. But between these two numbers vibrations produce on us only the sensation of heat, for we have no special organs adapted to them. There is, therefore, no reason why bees should not be sensible to vibrations even with their touch-organs which do not affect us. We have examined the antennæ repeatedly with the microscope, both superficially and section by section; and although using instruments second to none in efficiency, we have failed to trace any connexion between the organs described by Graber and Mayer and an auditory apparatus. The title of Graber's work above referred to is *Uber neue otocystenartige Sinnesorgane der Insecten*, 1878; and Mayer's *Sopra certi organi di senso nelle Antenne dei Ditteri*, 1878.

(*To be continued.*)

THE POLLINATION AND PERFORATION OF FLOWERS.

The perforation of flowers by insects, and in a few cases by birds, to get at the nectar by fraudulent means, is a matter of common observation; but in a few cases this is the normal way of procedure, as has been shown by Darwin and Muller, for insects are obliged to perforate the lax inner membrane of some orchids (nearly all of the British Ophreæ, according to Darwin)

in order to get the nectar, which lies within their tissues; and in the case of *Laburnum*, &c., Muller has shown that insects puncture the thickened bases of the standard petal in order to get nectar. I ought also to call attention to the destructive work of species of *Megachile*, which cut out parts of the petals of roses, pelargoniums, &c., and use them to line their nests.

A century ago Sprengel noticed that flowers were perforated. Since his time many European as well as American observers have noticed perforation. Among them I may mention Darwin, Delpino, Ogle, Kerner, Loew, and Hermann Muller. To Loew, and especially Muller, are we greatly indebted for painstaking labour in giving lists of flowers and their visitors, and, with the exception of these and a few by other investigators, we have no statistical tables on the pollination of flowers and their insect visitors, so that we have little accurate information as to what insects perforate flowers.

It is of value to know not only that a given flower is perforated, but also what relation the insect bears to the flower which it perforates. It is, indeed, interesting to follow out these relations from Muller's tables. . . .

Darwin, in his 'Cross and Self-Fertilisation,' &c., states that out of many hundred specimens of red clover examined by him, nearly all were perforated, and he has even seen whole fields in the same condition. Thos. Belt, and others, have noticed the same thing. It is quite as common for red clover to be perforated in this country as it is in Europe.

Italian Bees and the Red Clover. — In the summer of 1883, in the vicinity of La Crosse, Wis., I noticed large numbers of honey-bees on the flowers of red clover, and wondered whether they made perforations, or what they were doing. In some cases they obtained pollen, but in a vast majority of cases nectar was collected through perforations made by some other insect. Among bee-keepers there is a notion that the Italian bee is able to get nectar from red clover. I doubt whether this is true, for, in my experience, I never found them collecting nectar in the normal way; they seemed to collect only through perforations made by some other insect.

One thing will show, in part at least, why honey-bees go to the red clover at certain times and not on other occasions. It is a well-known fact that the amount of nectar secreted by a plant varies according to seasons and locality. There are periods, as I have had occasion repeatedly to observe, when hive-bees cannot collect enough to supply their young, and they then freely use the perforations made by *Bombus*, and other insects; but when there is an abundance of nectar they pass over fields of red clover, and when *Monarda punctata* is in flower, and has a good supply of nectar, they will pass over fields of white clover, and fly some distance to fields of wild bergamot.

Although the rule seems to be that honey-bees do not perforate flowers, there seem to be exceptions, for no less an authority than Hermann Muller states that they perforate the flowers of *Erica tetralix*, using their mandibles to bite holes in the tube of the corolla. The tongue of the honey-bee is only 6 mm. long, so that it is not able to get the nectar otherwise in these early flowers. Later he found honey-bees collecting nectar in the normal way, but he failed to observe whether these late flowers were smaller or not.

It is not always an easy matter to tell whether an insect makes the perforations, especially when these are in the form of longitudinal slits, or whether it is merely looking for the perforations of some other insect. In flowers where the tissue is firm, these slits close over quite effectively, and are not readily seen. While the honey-bee makes, at most, few perforations, Muller records many cases in which it uses perforations made by other insects; but it is sufficient here to refer to his works for these.

In this country, Meehan believes that the honey-bee perforates the flowers of *Salvia splendens*. Delpino, Comes, and a few other observers, also state that the honey-bee perforates corollas. I think, however, that, generally, honey-bees only use the perforations made by other insects, and they are certainly quick to perceive these perforations. Muller records the most interesting case of *Salvia Sclarea*, in which the tube of the corolla is so long that the honey-bee is not able to get the nectar in a normal way. It made several attempts, but did not try to perforate the corollas. When, finally, it found several in which the corollas had just loosened, it immediately began to sip the little drops of nectar which still remained attached to the base of the corolla. It is certainly a clear case, for the insect tried in every way to get nectar, except by perforating the corolla.

The examples of flowers perforated by *Bombus terrestris* show that it mainly pierces those from which it cannot get nectar in a normal way. Muller has found this interesting difference between its visits to flowers on the plains and valleys, and to those of alpine and subalpine regions; that while in the lower regions it perforates many flowers where the nectar is in part accessible to it . . . others are visited in a normal way in alpine regions.

Muller also found a constant difference in the length of its tongue. In the Alps its tongue was usually 8-11 mm. long, while in the lowlands only 7-9 mm. long. *Bombus terrestris* is one of the most abundant of European humble-bees, and this is perhaps one reason why it uses these illegal means to get nectar. But *B. mastrucatus*, as Muller's investigation shows, is the worst enemy to alpine flowers. Notwithstanding that its tongue is of sufficient length to enable it to reach the nectar of some flowers . . . it perforates them, and only pollinates such flowers as . . . it could not well perforate unless it were to go to more trouble than getting the nectar in a normal way involves.

Carpenter-Bees and Flowers. — The carpenter-bees, belonging to the genus *Xylocopa*, do considerable injury to flowers in more southern latitudes, where they abound.

Xylocopa Virginica, according to Cresson, is found in the middle, southern, and western States, and of the twenty-seven species of this genus mentioned in his catalogue, this is the most northern, and has the widest distribution. The species no doubt cause considerable annoyance, as Mann, Ryder, and Miss Murtdfeldt have shown. Mr. Mann was the first to describe one method which it uses to perforate flowers, in which 'the insect applies its sharp and wedge-shaped maxillæ to the grooved surface of the tube, and slits this open 3 or 4 mm. from the base.'

Dr. Schneck and Mr. Van Ingen each records several cases in which the tube of the corolla had longitudinal slits, but as perforators they found humble-bees (*Bombus?*). As these slits correspond so well to the slits I found on the tube of the corolla *Phlomis*, I bring them up in this connexion. I frequently found this *Xylocopa* in the act of making longitudinal slits in the tube of the corolla of *Phlomis tuberosa*. The insect applies its powerful mandibles against the tube of the corolla until it gains entrance, then, thrusting its maxillæ in as far as it can in a longitudinal direction, the tissue yields easily, so that longitudinal slits are the result. At other times the mandibles are drawn backward and forward, thus causing longitudinal slits. The number of slits varied from one to three. The insect did not take much trouble to find the old slits, but went directly at making new ones, as it seemed to be easier for it to do this than to waste time in looking for the old ones.

Wasps Perforating Flowers.—Wasps also perforate flowers, especially such as are adapted to this class of insects. . . . Mr. Robertson has reported to me several interesting cases where wasps use perforations, and, at

least in one instance, make them. At Orlando, Fla., he found five species of wasps which sucked the flowers through perforations, which are at first very small, but finally large and irregular. At Clinton, Mo., he observed that *Odynerus boraminatus* made perforations in the tube of the corolla of *Monarda Bradburiana*, which, as he thinks, were made by the wasp taking the tube between her jaws and cutting towards the mouth of the corolla, thus loosening a triangular piece which could be closed over the opening. In the Botanic Garden I frequently found the flowers of this species perforated, but the perforations were in the form of longitudinal slits.

While wasps do not generally perforate flowers, they are not above using those perforated by species of *Bombus* and other insects; for these, in their rapid visits to flowers, are certain to leave some nectar. Insects much lower in the scale than wasps frequently use the perforations made by species of *Bombus*, as Muller has shown to be the case in a small Ichneumon fly, which eagerly sought the nectar left in the flowers.—L. H. Pammell (*Shaw School of Botany.*)

(*To be continued.*)

JOTTINGS BY AMATEUR EXPERT.

Mel Sapit Omnia.

Mel.—Time was when there was a feud between the clan McNally and myself. I am a most unlucky chap: if I do not get into the wars by some remarks from my own cranky brain, some one is certain to point out something to me at which I am bound to rush if it is an abuse, and down comes the trouble on my poor devoted head. But we always manage somehow to make matters straight, be it amongst Britishers or Americans. Well, the McNallys and myself have sworn peace,—at least till next time, and so Mr. John McNally has sealed the truce with some *real* heather honey. The railway people managed to smash some of it as a matter of course, but apart from that it was extremely good: in fact, nothing like it can be 'got out of Scotland.'

Mel (?) again. But yesterday I received a glass bottle containing a substance that was bought in Norfolk this summer as 1887 honey. It looks like greystone colour paint; it is in a frothy ferment; it stinks horribly, and tastes like the combined essence of all the yeast and bottoms of stale beer-barrels rolled into a concentrated viscid mass. The vendor of this is known as 'Honey Mary' in her country-side. The history of the stuff I much wish to learn. I certainly never met with anything fit to compare with it.

Presents.—The post brings me a variety of things because I 'jot' from time to time in this column. My last present was a large photograph of our Canadian friend Mr. McKnight's stall at the Toronto Honey Fair last month. The display reminds me of our own at South Kensington in 1886; it is composed chiefly of run honey in 1-lb. screw-stopper glass bottles. There are a few sections and a few square tins, containing probably a dozen or twenty pounds each, but the whole erection is capped with flowering plants in pots, and over all a group of national flags. At the end of the stall, which is surrounded with crush barriers, stands Mr. McKnight himself. He looks well and 'at-home;' and the scene recalls the 'Honey House' at the Indian and Colonial Exhibition in 1886 very vividly. On the walls of the building are placards—'Honey, some reasons why it should be eaten,' showing the Canadians have the same 'push' at home as they displayed with us. I am very grateful as well as flattered by our friend's remembrance of me, and sincerely hope the stall showed a different appearance at the end of the show.

Dry Sugar Feeding.—I see the lazy bee-keepers—I beg Dr. Bartrum's pardon—are recommending this system at this season. 'Useful Hints' told us the other day how to make syrup in bulk. If that is too much trouble people only deserve their bees to die. This season, above all others, bees require all their energies being conserved, and yet people give their bees hours of labour carrying water to save themselves a very little trouble. When I read their letters I wish I could put them on a pump crank for as many hours as they give their bees 'penal servitude' carting water to mix with dry sugar.

Rapid Feeders.—I have been using Hutchings', which is made of zinc. I can get each stock to take syrup given warm at the rate of 1 lb. per hour. I have fed them through the day and given them rest at night, and have had no robbing; but I have been careful and not gone slopping the syrup about, and kept the entrances closed to about one inch only.

Giant Globe Thistle.—When attention was first called to this plant I had seeds sent me from three different localities—one in the far north, a second from Mr. Cowan, and a third from 'across the pond.' I find they all produced the same plant, and it undoubtedly is one of the first bee-plants I have ever grown. I have been cleaning and drying the seeds during the past week, and as I broke up the large globular heads the house was filled with a honeyed sweetness. If any one cares for a few seeds I shall be happy to extend my offer made to 'Apis II.' last week. Send a stamped addressed envelope to the Editor, and I will send you some seeds as long as they last.

The Jews and Honey.—Mr. Neighbour called our attention to the consumption of honey by the Jews a short time since. 'Honey Mary's' sample referred to above led me to look into the subject in Scripture. I find honey was not only considered a blessing and a symbol of fruitfulness and pronounced 'good' (Prov. xxiv. 13), but was coupled with 'leaven,' and forbidden in sacrifices. Leaven, we know, is a symbol of malice and wickedness; but why should honey be classed with leaven? Was it because it symbolises mere *human kindness*, which, like malice, is corrupt, and drew from the lips of the Saviour the rebuke to Peter, 'Get thee behind Me, *adversary!*' The sample sent that has led me to these thoughts are as highly fermentable as any leaven and far more offensive. I commenced with 'Mel, I will end with it—'Pleasant words are as an honeycomb, sweet to the soul, and health to the bones.' May these 'Jottings' be not only sweetened with *Mel*, but savoured with *Sal!*'—Amateur Expert.

Rattle-Snakes and Honey.—Near Fayetteville, Ark., two young farmers named Young and Stewart were out hunting a few days ago, and discovered bees passing out and in through a hole about forty feet from the ground in a large black oak, which was some four feet in diameter. Of course they thought that they had made a rich discovery. They were not then prepared to cut the tree, and started for home. On their way, Young bought Stewart's interest in the find, paying one dollar cash for it. Next day Young invited several friends to help him cut the tree and share the treasure it contained. So, supplied with axes and buckets, they proceeded to the woods, and cut down the tree. After it fell crashing to the ground, Young ran with a handful of leaves and stopped the hole through which the bees entered the tree, but soon they came swarming out at a split made in the trunk by falling. One of his friends pulled the plug out of the hole, and immediately a rattlesnake came crawling out, coiled himself, raised his flat head, and gave out that paralyzing sound with his rattles which, when once heard, is never forgotten. He was soon despatched, and the work of discovery went on. They then chopped into the log, split out a long block, and there found two other rattlers, which were promptly killed. What promised to be a delicious feast only proved to be a mass of dry comb. The tree was perfectly covered at the stump, and the snakes to reach the hollow had to climb forty feet.—*Globe Democrat.*

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

PREPARING FOR WINTER.

[1843.] At last a fine change in the weather has allowed the bees to work here on the ivy, which is most abundant, and now is covered with bloom. It has opened later than usual this year. The 22nd of September was the first day on which I saw bees on it. A cold snap, with frosts every night, kept things very quiet, but yesterday and to-day they are as busy as on a June day. Numbers of bees in straw skeps have died out already of starvation; bar-frame hives would have done the same but for constant looking after. The number of sections taken everywhere must be unusually small. One gentleman near this actually smothered seventeen hives, would not have them driven, and had only two of those with any honey in them. What a cruel waste of innocent and useful life, when it has been proved to demonstration that bees need not be smothered to take their honey! Smothering bees should be considered and treated as cruelty to animals.

Large breadths of plants affording bee-pasturage should be largely planted. Of *Limnanthes* an acre would not be at all too much, if one had a fair-sized apiary and the land to do so; is easily propagated—in fact, it once sown, it needs but to have the land renewed year by year, and in a fine season would give a good account of itself. *Berberis Darwini*, a beautiful shrub, *Buddlea globosa*, *Ribes sanguinea*, *Helleborus niger* and its varieties, called by some the Lenten Christmas rose, blooming from mid-January to April, in every shade of colour, from purple to white, many of them most beautiful, and affording pollen when crocus cannot be touched. Of these I propose planting out at least 200 for spring blooming. I do not think I ever saw any mention of this as a bee-plant in the *B.B. Journal*, except in Abbott's list of bee-plants given some years since. A plant of *Helleborus Abschasicus*, measuring four feet across, threw up thirty-six bloom-spikes, which give, on an average, six blooms. That will show what one may expect from established plants. Each bloom is good for three weeks, as the pollen ripens in succession, one set of anthers falling when ripe, and being succeeded by another. Those plants spoken of above, also all spring bloomers, should be planted in quantity. *Trifolium incarnatum*, vetches, mustard, are all most valuable, especially the latter, as it can be grown in succession. Buckwheat is a great forage plant, but gives the hives a most unpleasant smell. Small quantities of bee-plants are valueless when honey is the object; they cannot give a surplus unless the supplies are near and in quantity. Any one thinking otherwise is only deceiving himself. *Anemone blanda* at catalogue prices would not leave much profit on honey, nor would *Scrophilum nodosa*, that stinking and pernicious weed, leave much either.—JOHN J. SMYTH, *Rathcoursey, Ballinacussa, Cork, October 11th.*

CARNIOLAN BEES.

[1844.] Mr. Benton *v.* 'A. E.'—I was very pleased to see in last week's issue of the *B.B.J.* our respected friend, 'Amateur Expert's' reply to Mr. Benton's rather 'bumptious' epistle which appeared in your issue of the 20th September. If 'A. E.' is correct in his conclusions—and I have every reason to think he is, judging from his wide connexion with most of the bee-keepers in England—I think they have got their eyes opened so far as trading in foreign queens is concerned. I for one should like to see this subject probed to the root; and I have no doubt in the hands of such a writer as 'A. E.' the matter will be gone into in right ernest. The opinion I hold now I have always held, that the craze for having foreign queens would lead to such a state of matters as now disclosed. Those trafficking in foreign queens, &c., have done well in the past, and at the same time the parties who were reaping the benefits spare no pains in filling the columns of our bee papers about the great qualities of Carniolans, Cyprians, and other sorts. Why have British bee-keepers been so long and so easily deceived in the matter? Mr. Benton will require to make his remarks more easily understood; and if he has not been guilty of the charge now made against his queens, he must not try and bring in the names of others, even though they are opposed to him as brothers in trade. We shall wait patiently until Mr. Blow returns and hear what he has got to say in the matter.—JOHN D. MCNALLY, *Springburn, Glasgow.*

DO QUEENS EVER LAY EGGS IN ROYAL CELLS?

[1845.] I see by the replies to Query 569 that some are still in doubt that a queen ever lays eggs in queen-cells. Formerly there used to be many such, but I had supposed that at this late day and age (after such men as Gallup, Grimm, Shuck, and others, had testified that they had seen queens deposit eggs in queen-cells) the doubting ones had given up the old theory of the queen hating a rival so badly that she would in no way contribute toward the getting of such an one; but in this I see that I am mistaken.

It seems to me that the way an egg is attached to a queen-cell should be enough to convince any one that none but a queen could so put the egg, occupying the same position that it occupies in a worker-cell.

I never saw a queen in the act of laying in a queen-cell, but my hired man did, which gave me positive proof that what I had long considered as a fact was a literal truth. God said to all of His creation, after He had made it and pronounced it good, 'Multiply and replenish the earth;' then why should not the queen perform her part of this work as well as the mothers of all else living?

That one queen will kill another, when two come in contact, does not positively argue that the mother-bee should not do her part in keeping the colony provided with a means by which it could exist after she had left with a swarm. What difference could it make with her, after she had left, how many queens sprang up, so long as none of them could possibly harm her?

I am well aware that the workers do once in a great while carry eggs from an ordinary cell to an embryo queen-cell; still this is not done nearly so often as larvæ are so carried, and when eggs are so carried, it is very easily detected by the experienced eye, for they are placed in the cells in almost any shape, save the manner in which the queen does her work.

I once had a strong colony swarm, and before I could get around to do my part of the work they returned, the queen having her wings clipped. Thinking that I would be already for them the next day, I did not try to divide them in the afternoon, as I sometimes do, to save time for the swarms of the next day, but left them as they were. The next day, when they came out again, I was on hand, but before they were fairly out of the hive another swarm came tumbling out of a very populous hive and went with them.

No sooner were they all in the air than the whole of them were re-inforced by another swarm from another hive, which I had said was not to swarm that year on account of their having a failing queen. This last hive had been opened an hour previous, and all queen-cells cut off, so as to keep them as I wished for a few days, till I could get some queens fertilised which I had under headway; and one can imagine my surprise and chagrin when, before this last swarm had got two-thirds out, the whole mass went piling into the hive of the colony that I had determined should not swarm. After a few moments' thought I concluded to leave them as they were (only I put on section room to the capacity of 100 pounds, or over) to see what would become of it.

The next morning, before 8 o'clock, out they came, and were hived in an empty hive, after giving them one of the good queens which were kept back the day before. Having secured them, and having the old queen that I had said should not swarm in a cage, I went to the hive to inspect it before I let her go back in. Now came the greatest surprise of my life in the way of queen-cells, for by turning to my diary I see that by actual count there were 423—276 of them having eggs and larvæ in, when less than eleven hours before there was not a queen-cell in the hive.

Here was where I first detected the difference between eggs carried to a queen-cell by the bees and those placed in them by the queen. I decided that 188 eggs had been laid by the queen in these cells, by their being attached by the point to the bottom of the cells, and 17 were carried there by the bees, as they were in all positions in the cells; 71 cells had larvæ, which the bees must have carried there, of course. These larvæ were from two to three days old, as nearly as I could judge, and all of them were literally swimming in royal jelly, as much so as any I ever saw of that age in my life. Here is a point worthy of note for those who claim that no queen can be really good unless started from the egg and fed as a queen.

Since then I have a few times had eggs and larvæ removed from the comb I had given to a queenless colony, to a dry comb at its side; but in all these instances the queen-cells were built first, and the eggs or larvæ deposited in them, the position of the eggs resembling that which I have described above; but as I said near the beginning, the cases are quite rare where either eggs or larvæ are removed from one cell to another, and three larvæ are removed to where one egg is removed: for the bees can get a queen more quickly from the larvæ than from the egg.

The usual way of working in a queenless colony to secure a queen is, to float the royal larva when chosen, out to near the end of the worker-cell in which it is, and when there, turn a queen-cell down over the ends of the cell. Nearly all writers tell us that the bees when made queenless tear down adjoining cells so as to build a queen-cell over the larva which they have selected for a queen; but this is not done once in one thousand times, according to my experience, and not then unless the combs are new, not having any cocoons in them, or the selected larva is near a hole in the comb, or the edge thereof.—G. M. Doolittle, *Borodino, N. Y.* (*American Bee Journal*).

DISPLAY OF HONEY AND HONEY-COMB.

Suggestions for Future Schedules.

[1846.] These should be confined to a given weight, say, two classes, one under 50 lbs., the other under 100 lbs., this, in my opinion, would bring out more competitors, and at the same time give small bee-keepers an opportunity of competing with those who probably could stage 500 lb. as easily as a small bee-keeper could stage 100lb. Two distinct classes, and those competing in the one debarred from entering in the other would, in my opinion, be a marked improvement, and give a chance to small bee-owners that hitherto they have had no choice in the matter.

Sections.

I see no good reason that twelve or twenty-four sections should be required for a class if three or six will do the same purpose. A small bee-keeper may be able to pick out three excellent boxes from his limited supply while he cannot manage twelve or twenty-four the same way as those who have hundreds to select from. The same applies to run-honey as the foregoing, and I have no hesitation in saying that increased entries would be the result if such a rule was adopted.

I would suggest that there should be two distinct classes for comb and extracted honey—*i.e.*, a class for comb-honey of a previous year, and one for the current year. There would then be an opportunity given of showing the superiority of the one season's produce over the other, if any; also two distinct classes for *run-honey*, the one in *liquid state*, the other *granulated*. This would give all a chance, and specially those whose honey granulate twenty-four hours after being extracted.

The reason I ask for consideration of these points is to check the great risk that is connected with carrying such a large quantity of honey, say, from 300 to 400 miles, and also the expense of carriage, while those who reside within a certain radius of where the competition is being held can stage the whole produce of their apiary without much expense or risk either. When the quantity is plainly stated on a schedule we will then know what to work for, and be able to compete with our friends.—John D. McNally.

WHY SOME HONEY IS NOT SAFE AS A WINTER FOOD FOR BEES.

[1847.] Some kinds of honey contain a great part of indigestible substance; for instance, honey from the bark louse, or from some kinds of pine trees in Germany. This honey is clammy and smells like rosin, and has been known to cause dysentery in every hive of a large vicinity. The trouble is that the intestines of the bees are too soon overloaded.

If late-gathered, thin and watery honey is the greatest part of the winter food; it may absorb some more water, may ferment, and the acetic acid may cause a sickness of the alimentary canal that will lead to dysentery. If the bees can have an occasional cleansing flight, they may recover in both cases, but long confinement, or very low temperature, and the consequent increased consumption of unsuitable stores, may prove fatal to the colony.

Some honey candies very easily, especially very thin and watery honey of some spring flowers or rape. I know such honey candies in the summer-time. Such honey freshly gathered contains much cane sugar and little reducible sugar. By-and-by this cane sugar will be changed to reducible sugar, and thereby some water is bound chemically, and this causes the candying in warm weather. If the bees have no other honey for winter food, they can't eat it except they have some water to make a solution of the honey. They uncap the honey and try to lick out every particle of the fluid from the honey, while the hard sugar part will drop down on the bottom board. The bees get very uneasy, and in a short time they will show dysentery. A quart of water given in a proper way would save the colony.

Other kinds of candied honey may be safe for winter food, because the bees cluster on this honey and make it liquid by animal heat. Good basswood and clover honey is surely as good for winter food as sugar. So we see unhealthy honey is easily to be determined without any analysis.

Pollen of itself will not cause dysentery. The bees do

not eat pollen before they commence to breed, after this they need pollen and get uneasy if they have none. So the absence of pollen can cause dysentery, not *vice versâ*. I think winter losses are caused 99 cases out of 100 by starvation. The next cause is dysentery, and this is again caused by—1, Bad honey; or, 2, too cool a winter quarter; 3, too wet and mouldy hives and combs; 4, want of water; 5, too early breeding; and 6, too high a temperature, by which the bees get uneasy. All this will do no harm, if the bees can have a cleansing flight, but will be fatal if the bees are confined very long. This, briefly, is my opinion on the question.—L. STACHELHAUSEN (*American B. Journal*).

A VISIT TO THE ROYAL BERKS APIARIES, WORLD'S END, NEWBURY.

[1848.] Not having seen Mr. Woodley since the show at the Colonial two or three years ago, I wrote to him informing him I should be pleased to pay him a visit some time this autumn. I received a reply saying that he should be very glad to see me, but that he had no honey to show me. Accordingly I dropped him a line to say that I would be at his place on Monday the 24th of September. We had had nearly a fortnight's fine weather previously. I started about 7 a.m., and had scarcely got half way to Leamington before it began to rain, and it did come down most of the time I was in the train. However, it cleared off just before I arrived at Hampstead Norris Station, and found friend Woodley waiting there for me. After mutual congratulations we got outside the station, when to my surprise I found he had a trap there. He told me he was going round to Hermitage to fetch some stocks of bees in skeps, and this enabled him to meet me, thereby killing two birds with one stone.

We accordingly went. I noticed that the bees were the old-fashioned English bees, and as the season up there had been nearly as bad as we have had it, the stocks were very light, and would require a deal of feeding. On our way to World's End we came up with a young man, who I afterwards found was somewhat of a dealer in bees. He expressed rather strong opinions against bee-keepers' associations, saying that he, and others had told him the same, did not reap any benefit by them for the half-crown subscribed; he rather seemed to think it was through them that the price of honey was lowered so much last year. He did not seem to realise that so many more people had become bee-keepers, and by this means so much more honey had been obtained. After a little discussion, we proceeded on our way up a road that, Mr. Woodley said, was an old Roman road, leading one way to Winchester. The mile or two that we went up it was very sandy, and I could not help remarking that if the Romans had had cannon in their day they would have made it a better and more solid road. Presently we emerged on to a good road, and not very far up it was Mr. Woodley's cottage, and a little on one side, on a nice little lawn, stood three stocks of bees in bar-frame hives, which Mr. Woodley said were his trade-mark; while from the road, as we went up in the trap, could be seen many of his stocks of bees further back in the garden.

When we arrived, I was introduced to Mrs. Woodley and their daughter: they have a son who is away from home now, and was shown a little hive that he had made, and kept humble bees in when he was at home. I was ushered into a nice cosy room, and having dined, we went out into the garden taking a look all round the apiary, and discussing many points of bee management. The afternoon was very dull, but I noticed a great many bees on the sunflowers and borage, which were flowering about the garden in great profusion. On taking a glance round, the preponderance of the Combination hive is quite marked, though comb honey is Mr. W.'s forte. I asked Mr. W. how many stocks he had got, and this is something like it:—Fifty-six in Combination hives, four in makeshift hives (all these have frames parallel to the entrance), also twelve stocks in Woodbury chaff hives, part with frames parallel to entrance, and part at right angles to entrance, also six colonies in twin hives, frames at right angles, also twenty colonies in straw skeps.

Mr. W. said he had taken especial notice of something like forty stocks in skeps this season, outside his own apiary, and had found combs built at every conceivable angle to the entrance, proving, to his satisfaction, that bees are not guided by any rule in the matter, and that they are guided by convenience of attachments of comb to domicile to which they build; and as far as he was able to judge by his eye, the stools were level on which the stocks stood.

Speaking of brace combs, and the means of preventing their attachment to the bottom of the sections, we should like something (more particularly myself) that would not hinder the bees, like, as we think, the excluder-zinc does: however, I have got one of the Raynor honey-boards, and hope to be able to test it another season. As regards honey, Mr. W. had a better honey-flow the early part of the season than I had in my locality, some of his stocks not requiring to be fed very much.

After looking all around we went into the house, and Mrs. W. showed me her plan of glazing sections, which I consider very expeditious. We then went up into the room where the crates of sections, extractor, foundation, wax, &c., are stored. Mrs. W. said that it took her four days scraping propolis off the sections and crates, and rearranging them, remarking to me that they will be first-rate to put on hives another season.

On going downstairs again Mr. W. showed me his silver and bronze medals and certificates, of which he has a large and varied number, and last, but not least, a beautiful silver cup, out of which I had some mead or metheglin, which was first-rate. Then, looking at the time, we found that the afternoon had slipped away so fast there was only just time to get tea and be off. So, having wished Mrs. Woodley good-bye, there was an hour's walk to the station, to which Mr. Woodley accompanied me. We had many matters to discuss by the way, and got to the station just in time; and having bid Mr. W. good-bye, off I went at 6.33 p.m., and got to Leamington about 9.30 p.m., and had a five-mile walk home in the rain (which had commenced again), arriving about 11 p.m., rather tired, but much gratified by my day's outing.—JOHN WALTON, *Honey Cott, Weston, Leamington*.

A JOURNEY FROM THE MOORS.

[1849.] Having decided to fetch our bees from the heather on Saturday, September 29th, we made arrangements accordingly, and having engaged a pony and borrowed a rully, we took the pony to fetch the latter, and found that some one had been before us and borrowed it on French leave, so we had to go and hunt it up: and, having found it, we commenced our journey after a delay of three quarters of an hour, reaching the moors at half-past four. We commenced at once to pack our bees, tying tape round the frames and placing pieces of wood between the frame ends, wedging all up tight to prevent the frames rocking, as we had to go over four miles of rough road and finish with three miles of good. The frames we covered with perforated zinc tacked to a frame to allow a space over the top bars, and screwed down to the hive sides. Darkness came upon us before we had finished, and, to make matters worse, rain began to fall pretty fast; however, as we had got zinc on all the hives, the bees were none the worse for the rain. We loaded the rully, placing the hives upon a good layer of ling, covering them with the hive-covers, so they had

plenty of ventilation, and were kept dry at the same time; the section crates (alas! almost empty) we placed in the outer cases covered with old bags. We finished loading about 7.45, and the night was so dark that we could not see our hand before us, to use a nautical phrase; and the rain came down rather too fast to be pleasant, which made the roads in a fearful state. We had not provided ourselves with a lantern, so were compelled to proceed very cautiously, my friend, Mr. C——r, walking a few paces in front of the horse so that he could inform us when we came to a turn in the road, myself walking beside the rully, whilst Charlie W——s (also a bee-keeper) led the pony; and it took us all our time to keep the road. Twice were we brought to a full stop through Mr. C. shouting—'Stop! or we shall be in a a dyke!' Charlie and the driver did not require to be told twice, I can assure you. We then went and had to feel for the road with our feet and umbrellas, as it turned suddenly to the right, on the left of which ran a dyke; but by careful navigation, and a good look-out, we reached the turnpike road without any mishap, and having now a good road it was more easy travelling. We reached our destination, unloaded the dray, set hives in position, took zinc from entrances, covered up warm, and left our bees to go and look after ourselves, as we were wet through, and thoroughly tired with our weary tramp.

We examined them on the following Monday, and were pleased to find no combs broken. The bees had stored very little in the sections, but the stock combs were solid slabs of honey, except one or two in the centre, which were three parts filled, so they will require no feeding, and will give us a little surplus; but what a pity that we have to destroy the combs to get it! —A. Woodhead, *Goole*.

RUSSIA.

Wintering Bees.

Being sure of the interest you will take in whatever relates to wintering bees on their summer stands with us in the north, during an exceptionally cold time, I am prompted to give you particulars.

The hive for your colonies which you described in your *British Bee Journal* (page 535, vol. xiv., 1886) remained in its place in the garden the whole winter, and this gave me the opportunity of observing the effect of wintering out of a cellar during great cold; also the effect of the entrances upon the well-being of the colonies and the difference in the spring between the hives which were wintered in a good cellar and my quadruple hive which bore the brunt of all the four winds. The results have surpassed my greatest expectations. My large hive, furnished with dry leaves above the woollen quilts and at the sides, and protected under the floor-board with straw, has not only withstood the severe and prolonged cold of last winter, but it has also surpassed the other fifty hives (both Berlepsch and horizontal twin hives) which remained in the cellar in vigour and activity. During this very late summer the bees of this hive gave the first swarm on the 9-21 June, whereas the others did not commence swarming for twelve days later. The first swarm came from the colony whose entrance faced the north. One of our old bee-keepers (Witzwitsky) was right in favouring this direction for the entrances of hives. I am not sure that my hive could have consumed less honey if it had been put in the cellar, but I find in the autumn that it contained no less honey than the others. — A. de Zoubareff, *St. Petersburg, Sept.* 19, 1888.

Change of Apiary.—Owing to the removal of Mr. E. McNally across the Border to join the ranks of our English friends, and also the removal of Mr. Ferguson's nursery to another district, the apiary situated in the nurseries known as 'Berelands,' the joint property of Messrs. E. and J. D. McNally, has also to be removed. Mr. John D. McNally, who has now become sole partner in the concern, has resolved, and we think wisely too, to clear out entirely from Rutherglen, and is at present negotiating for a site in the vicinity of Bishopbriggs or Lenzie, where the locality abounds with everything favourable to make bee-keeping a success, and being within sight of the Campsie Hills, we should expect to see fine specimens of honey from that locality in a good season. We wish our friend good luck and success in the new adventure, and shall be pleased to have a report from him at a future date.

NOTICES TO CORRESPONDENTS & INQUIRERS.

W. Loveday.—The hon. secretary of the Essex B.K.A. is Mr. F. H. Meggy, High Street, Chelmsford.

A. Turkington.—The sample of sugar forwarded will be found suitable for making syrup.

J. B. Blundell.—Foul brood.

T. Nixon.—1. *'Lift' for Winter.*—Close hive entrance and let entrance be through lift. 2. *Strength of Stock.*—Fairly so. 3. *Mice.*—Try heavily peppering the coverings. 4. *Quilts.*—Sugar-bags will do if cut to size, but we prefer cushions. 5. *Enamel Quilts.*—We know of nothing as cheap that answers the same purpose so well as American oil-cloth. 6. *Spare Queens.*—The bee-world generally would be glad to know of a satisfactory way of preserving these.

A. W.—*Heather Honey.*—Sample forwarded is a fair specimen of English heather honey. It is on the point of granulating. If the bottle is left open the bubbles will rise to the surface, and will in time form a white crust. The air-bubbles may be prevented by placing the bottle in warm water, or by frequently stirring the honey, but it is questionable whether this latter mode would be desirable.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin
Appleton, H. M., 256A Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Burtt, E. J., Stroud Road, Gloucester.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.
Hutchinos, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley & Flood, 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Benton, F., Laibach, Carniola, Austria.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Simmins' Bee Company, Limtd., Rottingdean, near Brighton.

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Editorial, Notices, &c.

BRITISH BEE-KEEPERS' ASSOCIATION.

The Finance and Exhibition Sub-Committee met at 2 p.m. at 17 King William Street, Strand, on Thursday, 18th inst. There were present Hon. and Rev. H. Bligh, in the chair, Rev. Dr. Bartrum, Rev. R. Errington, J. M. Hooker, Captain Bush, Rev. J. L. Seager, and the Secretary. The Exhibitions Committee fully considered the Prize List for the Bee Department of the Royal Agricultural Show to be held at Windsor next year. Several new classes were added, and considerable improvements made throughout the entire schedule.

The General Committee subsequently met at 105 Jermyn Street at 4 o'clock, the Hon. and Rev. H. Bligh in the chair. There were also present the Rev. Dr. Bartrum, Rev. J. L. Seager, Captain Bush, and the Secretary. Communications were read from the Rev. F. S. Sclater, Captain Campbell, Rev. George Raynor, H. Jonas, and the Rev. R. Errington (the last having to return immediately after the Sub-Committee meeting), regretting their inability to be present.

The Finance Committee's Report having been considered, the accounts as entered were ordered to be paid.

A letter was read from Mr. Walter Martin requesting that, in the event of the Lincolnshire Agricultural Society continuing the Bee Department of their annual exhibition, the B.B.K.A. should give some support towards the undertaking. The Secretary was instructed to inform Mr. Martin that the Committee would give general support to the proposal.

The Prize List for the R. A. Show at Windsor was considered, and after some discussion approved and passed. It was resolved that the sum of 50*l.* be awarded in prize money. Dr. Bartrum called attention to the fact that the financial position of the Association hardly justified so large a sum; but inasmuch as the event of the next year's exhibition being an exceptional one, and partaking somewhat of a metropolitan character, he considered that the Association should act liberally, and that an appeal should be made to bee-keepers generally for support in the undertaking.

It was resolved that steps be taken for the publication of a leaflet on the treatment of foul brood.

QUARTERLY MEETING OF COUNTY REPRESENTATIVES.

The Hon. and Rev. H. Bligh in the Chair, the following Representatives being present: Mr. W. Lees McClure and Mrs. Currey, Lancashire and Cheshire; Mr. W. B. Webster and Mr. A. Woodley, Berks; Mr. Grimshaw, Yorkshire; Mr. H. Cudd and Mr. Jesse Garratt, Kent; Mr. Taylor, Surrey. The Minutes of the last quarterly Conference were read and confirmed.

Mr. McClure reported that the Representatives had held their usual preliminary Meeting.

1. The Representatives wished to express their regret at the absence of the Rev. W. E. Burkitt (Wiltshire), through illness, and to express their hopes that he will speedily recover.

2. The Repres ntatives expressed their disappointment in not having a corrected proof of the amended regulations for third-class examinations submitted for their consideration.

The Secretary pointed out that the proofs were in the hands of Mr. Raynor, who had been ill and unable to complete it. Resolved that a proof copy be sent to each Secretary, to be returned within one month.

Mr. McClure further reported that in reference to the proposal made at the last Meeting of the Committee of the B.B.K.A. for receiving Associations (other than Counties) into affiliation, the Representatives had considered the matter, and had drawn up various suggestions in regard to amendment of the conditions and privileges of affiliation. After some discussion it was resolved that the consideration of these suggestions be postponed.

The prize list for the Bee Department of the Royal Agricultural Show at Windsor was read, the Representatives expressing their unanimous approval of the amendments introduced.

On the motion of the Rev. J. L. Seager, seconded by Captain Bush, it was resolved, 'That the British Bee-keepers' Association do apply to the Royal Agricultural Society to allow the Berkshire Association to give a sum, not less than 10*l.*, towards the schedule of prizes, two-thirds to be offered in prizes for honey produced in Berkshire.'

On the motion of Mr. McClure, it was resolved that the next Quarterly Meeting be held on the same date as the Annual General Meeting of the B.B.K.A.

The last Quarterly Conversazione of the present year was held at the offices of R. S. P. C. A., 105 Jermyn Street, St. James's, on Thursday, October 18th, at 6 p.m., when among the large audience present were the Hon. and Rev. Henry Bligh, Mr. Hooker, the Rev. J. L. Seager, Captain Bush, Mr. Grimshaw, Mr. Webster, Mr. and Mrs. Garratt, Mrs. Currey, Mr. Neighbour, Mr. McClure, Mr. Henderson, Mr. Graham, Mr. Cooper, Mr. Buller, and other ladies and gentlemen.

Mr. Grimshaw, having been voted to the Chair, opened the proceedings by calling on the Rev. Mr. Seager to favour the meeting with his opinion on the subject of County and District Associations, and certain proposals in reference thereto, which the latter gentleman had undertaken to submit for consideration that evening.

Mr. Seager's address was delivered *viva voce*, and we had prepared a report of it, but in a communication we have received he suggests that, in order that the subject should be fully brought before our readers, he should himself write out his paper at length, and he considers it is desirable that we should 'hold it over' till the following week. As the matter treated is one of great interest and importance, and indicates a new

departure in the conduct of associations and districts, we readily accede to Mr. Seager's suggestion, and postpone the paper to our next issue.

The Chairman, Mr. Grimshaw, had purposed to read a paper on the Sting of the Bee on the same evening, but, in consequence of the length of time occupied in the discussion of Mr. Seager's paper, it was found impossible to do so. Mr. Grimshaw has kindly placed his paper at our disposal, and we have much pleasure in subjoining it:—

THE STING AND ITS POISON.

Some three years ago I had the pleasure of reading you a paper on the 'Identity of the Bee's Sting with the Ovipositor of other Insects;' and at this time, without desiring to refer at too great length to the opinions I then expressed, I may recall to your minds that I considered the sting of the worker-bee a modified or aborted ovipositor, utilised by the insect as an offensive and defensive weapon (the only one at its command), exactly in the same way as other insects have been known to use *their* ovipositors, depositing in the wound a quantity of corrosive poisonous fluid, similar in its toxical properties to that pumped under the skin by the bee.

When we expect the perfect use of the different parts of any animal, we presuppose that we have a perfect one to deal with; and as we know the worker-bee to be an imperfect example (inasmuch as its reproductive organs are aborted and undeveloped), is it an unfair assumption that the anatomical structure of the sting, being so identical, mechanically, with the ovipositing organs of other insects, its use of this organ as a sting is, on the face of it, faulty and imperfect, especially when we observe the astounding fact that such a use of it ends in death, tearing from its fixing and base, in a rude repulsive way, part of the abdomen and its contents? This always seems to us a cruel and somewhat unnatural arrangement. Depend upon it that when we find an untimely death resulting from the exercise of such a natural impulse as self-defence, there is outrage on, or interference with, Nature's laws; and an inquiry into such an abnormal state of things may assist us in finding the true uses of the parts under consideration. If the ostrich by using its two claws, the deer its antlers, the bull its horns, lost their lives as a necessary sequel of a defensive effort by a coarse rending away of these very weapons, we might, I think, very properly come to the conclusion that they were intended originally for some other use; in the case of the reindeer, for instance, the horns are modified in form to plough up the snow in a food search, or to clear a way for the herd through the bush, as in the case of many other deer.

I know you may quote against my assumption the fatal effect on the drone of a somewhat similar rending of its structure, but the analogy scarcely holds good, for with him we are dealing with an admittedly *perfect* insect perishing after having successfully played its part in the world, illustrated many times in both vegetable and animal kingdoms, whereas with the worker we are dealing with an *im*perfect one—imperfect because of its inability to take part in reproducing its kind, however well it may indirectly aid others in so doing, just as the worker is a necessary help in reproduction, by nectar and pollen-gathering, brood-rearing, cell-building, and so on, yet after all she is only an adjunct.

We find the queen humble-bee performing all these labours herself until she has a family of workers round her as deputies, still they are only reliefs, lady-helps.

We must, I think, consider the sting of the queen, with its curved form and barbs differing so much from those on the worker's sting as a true ovipositor, *the* perfect instrument in the perfect bee, exactly corresponding (as it does) to the saw-like ovipositor of other hymenoptera; we must put it in opposition to the imperfect instrument either faultily used by the worker for another purpose than that originally intended, or in process of adaptation or modification. We find the ovipositor of the queen curved towards the under part of the abdomen, the barbs fewer in number, and not so sharp and formidable as those on the worker's sting; the ovipositor (or sting) may thus be withdrawn when used in queen-fights. Here, again, is another bit of evidence against considering the instrument as a sting:—The queen not using it when attacked by workers or any enemies such as ourselves when we handle or even injure her.

One cannot think, then, of the queen and worker being provided with such a complex and beautiful piece of mechanism, attached to which are the highly sensitive palpi; the toothed sheath, the marvellous rods and slides, the barbs and poison apertures, the poison-bag, with its valves and admirable pumping arrangement, the oil-glands providing a lubricant which prevents the poison from clogging the darts, and (mark this) thus enabling them to be brought into use again and again at the need of the insect, the delicate poison-glands secreting the wonderful preparation from the blood and storing it in such an intricate reservoir,—I say we cannot think of all this work remaining dormant and useless in the queen, excepting on the occasion of a few fights spread over a few years, or in the case of the worker existing only as a standing menace of death if brought into play, especially when we remember that for every one bee using its sting as a sting in its wild or natural state, very many thousands die without ever so using it. It is not, I hope, blasphemy to say the Creator does not waste His work in any such way.

We must look around for as regular a use of this whole apparatus, as we find when we regard the tongue or the pollen-clearing and collecting contrivances. We cannot attend the queen in her movements on the cell-base during egg-laying, but we may clumsily try to imitate her. In this effort I take a piece of foundation; and make a scratch with a needle. I next apply strong sulphuric acid, the same diluted, and poison from a bee's sting, to different parts of it, and I find the joint action of the wax and acid produce a stickiness of the surface, to which my little bits of white thread (resembling bees' eggs) adhere, and remain fixed by their ends quite as firmly as if placed there by the queen herself, though the implement of the queen is much in advance of mine, inasmuch as she can apply the corrosive fluid at the time of making the scratch by slightly bending the abdomen forward, or with her curved ovipositor she can use the side barbs as the saw-fly uses its saws, depositing in the groove her poison just as the saw-fly does. This discovery filled me with delight, for I could by analogy now see the use for what had hitherto seemed almost useless organs in the mother bee. I could also dispense with the generally received notion that the egg is provided with an adhesive secretion on its extrusion (but by what glands secreted we are not told). The necessity for the extremely sensitive palpi of the sting, so as to enable the bee to feel about on the ridges formed by the lozenges of the cell-base for a suitable spot on which the egg may be placed, thus becomes evident. Let the queen use her sting and poison in a contest with an opponent if you like, but we can no more call that its true office than we can say the true use of the hind-legs of a horse is as a means of attack and defence. Well, as the horse uses its heels, the worker-bee uses its sting, its old ovipositor, for which it has no use other than those it can adopt it to. My idea that the sting is used by the queen as a groove-former, and the poison spread on wax as an adhesive compound, to which the egg is attached on being laid, is somewhat borne out by the experiment of Mr. C. N. Abbott. This well-known practically scientific bee-keeper found that when he gave wooden-based foundation, the queen refused to lay in cells.

If we now experiment with bee-poison, we find we can use it as a capital varnish and mixing medium, a

varnish at once antiseptic and complete, so that the cell may not after all be polished and varnished with the orthodox mixture of propolis any more than we ourselves need polish timber, fetching and carrying the materials, when we have a varnish ready made. The worker's sting, then, may be a tool used for macerating wax by the aid of the secretions upon it, a moistening gum-like secretion being all the while pumped out through the openings in the rear of the barbs by each muscular movement of the darts, the palpi of the sting being used as a brush or spreader of the acid secretion—our bees, perhaps, diligently working when we have been crediting them with the idleness of wax-secretion.

Dr. A. Von Planta (*B. B. Journal*, p. 410) throws some light on the value of bee-poison as a preventive of fermentation when mixed with honey; on this subject I have nothing to add to my remarks made in a recent paper on the medicinal properties of honey. It is generally understood that the *active* principle of the bees' sting is formic acid, and that a hypodromic injection of this acid is poisonous to the bee and other animals; this is not the case, the result of this act is only a local irritation and inflammation. Now formic acid corresponds to methylic alcohol, just as acetic acid corresponds to ethylic alcohol (wood spirit or spirits of wine); these are the two simplest acids, and are most nearly related. Acetic acid (dil) is prescribed as a subcutaneous injection for cancer, so there cannot, after all, be much danger from formic alone; indeed I have experimented on myself with it and find little harm in it. This acid alone produces upon wax, on the skin, or in the blood—(1) effects quite different from those made by bee-poison; (2), it is very volatile, giving off an odour much resembling that from acetic acid, not leaving a crystallised or gummy residue as does bee-poison; (3), its colour is different; (4), it is not poisonous; (5), it does not mix with, soften, or varnish wax, as is the case with bee-poison. Now, although the bee requires formic acid it does not gather either it or the oxalic acid from which it may be derived, it is a secretion of its body from (in all probability) some other more complex acid which it may gather (I refer to uric acid, from the very mention of which some hypersensitive natures seem to recoil). From this acid oxidising agents may give the bee compounds containing oxalic (or, oxalic may be secreted from nectar, honey, or other carbon compounds acted upon by nitrogenous substances). For the matter of that, the decomposition of the liquids said to be much sought after by bees will give them their formic acid: I prefer, however, to lean to the pleasanter formula:—the oxidation of hydro-carbons into the simplest of the fatty acids, say, for instance, a hydro-carbon CH_4 is oxidised into CH_4O, again into CH_2O, and, finally, into CH_2O_2, the formula of formic acid (at least this is a precess of the laboratory), how much more simple or intricate in the alembic of the bee we may never know—the conversion of floral perfume into what we find it—we know this, however, it is secreted copiously and used plentifully in various ways, least of all as a venom or poison. I have come to the conclusion that the truly toxical (or poisonous) principle of the bee-sting is an animal alkaloid, a virulent poison secreted in its body from the volatile and essential oils found in nectar,* that this alkaloid is collected by glands and stored in the poison-sac mixed with a gummy, non-saccharine substance, and heavily diluted with formic acid. What is this gummy substance, this residue left by a dried-up drop of poison? Taking the temperature of the bees' body at something near our own (90° being required in the hive for wax-secretion) I find Canada balsam and formic acid soon give us a suitable gum; fir-wool oil, terebine, and preparations of turpentine do this also, but in my experiments with formic acid and sugars I fail altogether. Now, if the bees gather turpentine (a resinous substance exuding from trees of the pine tribe, which we call propolis), oxidation of a small quantity of this taken into its system converts it into various acids, or, having undergone a slight change, it may be stored in the poison-bag for use in wax softening; thus giving our bee its furniture-polish, varnish-pot, and gum-pot, in one. We are often told about bees mixing propolis and wax together, doing this, that, and the other, but we are not told whether the tools are at the tail or the head of the insect; neither have we been informed where the flux or mixing medicine is found. I think we know now. Triturating wax with formic acid produces no perceptible result so far as softening it is concerned, but, on the other hand, treating wax with an alkaline gives us a soft, plastic mass, which, in turn, by the addition of a little acid becomes a similar froth-like substance, such as we find in the bees' first process of preparing wax-scales for cell-building.

While agreeing with Mr. Cheshire that the offices of Nos. 2 and 4 glands are of a digestive nature, secreting brood-food from honey and pollen, I am inclined to the belief that the system No. 1 (or No. 3) gives an alkaline salivary secretion, converting cane into grape sugar, and dissolving gluten, oil, &c., while starch-granules may be converted into dextrine by dilute acids secreted by the glands of the other system—ferments and yeast.

I may, however, remark, transform cane sugar into dextrose (glucose or grape sugar), and into levulose or fruit sugar; such a ferment is Mycoderma aceti. Pollen, the nitrogenous flesh-former of bees, requires a different digestive secretion than that necessary to convert nectar into grape sugar, but until it be changed it cannot, of course, be assimilated by the bee. If we ourselves have two distinct digestive secretions—the alkaline of the mouth and the gastric of the stomach—we are not going beyond the bounds of reason in ascribing a similar arrangement to the bee's salivary secreting organs, nor in attributing to the sting, the barbs, the palpi, and the poison other and truer uses than those usually attributed to them in the grand scheme of economy, the great and glorious Harmony of Nature.

* It has recently been proved that alkaloids are the products of organic decomposition, that they can be artificially induced by the decomposition of vegetable matter, that alkaloids of the most toxic kinds exist even in the human economy during life, existing in the kidneys, viscera, muscles, and brain matter, in the sweat, blood, and saliva, an interesting study may then be made of diseased conditions of the body ending fatally from a bees' sting.—*Life Lore*, p. 60.

USEFUL HINTS.

Weather.—During the first ten days of the present month we read of 14 degrees of frost being registered in Westmoreland. The mean of the lowest night temperature for the same period was only 31·7 degrees, the lowest of which there is any record. The centre of the anti-cyclone (the cause of this unusual degree of cold) was over Ireland, and the winds, in consequence, were westerly in the northern districts, and easterly in the southern, but light in force. This early winter is another straw added to the already heavy burden which bee-keepers have to bear, since it has effectually prevented the bees carrying down and sealing over the supplies of syrup, whether offered in rapid or slow feeders. May it not be that last straw which breaks the back?

Sugar Cakes will now be the safest food for bees in frame-hives. If well made they are readily taken by the bees, and there is no danger of deliquescence, so that the cake may be laid over the cluster of bees and be covered by impervious, and woollen quilts. In cases where sufficient store of syrup has not been laid up, in consequence of late feeding and cold weather, we advise

the use of these cakes. If used on skeps it is well that the feed-hole should be from 3 to 4 inches in diameter, and the cake should be slightly raised above the hole to allow passage for the bees, and must be well and warmly covered up. We prefer the 2-lb. size, but others consider the 1-lb. cakes more handy, especially for skeps.

Sugar Candy used to be in the olden times a favourite winter food, but we hear nothing of it now. We have saved the life of many a skep-colony by turning up the skep and pushing in between the combs all around the cluster of bees the sticks of sugar candy. It is a food of which the bees are very fond.

Feed, feed, must still be our earnest exhortation, especially to the cottager whose bees must otherwise perish. Feed with sugar cake or sugar candy.

A Comb-Filler, the invention of Mr. J. H. Howard, is a most useful appliance, and, although we should hesitate to describe it in the inventor's phrase as 'enabling the bee-master to dispense with every other feeder, in apiaries large or small,' nevertheless in a season of dearth like the present, it certainly enables him to feed rapidly (at a great saving of time and wear and tear of bees) almost any number of colonies. It consists of a syrup-tight box, in which a frame of empty comb is placed. The syrup is heated to 10 or 15 degrees above the surrounding temperature, and the box is filled within an inch of the top-bar of the frame. The lid is then placed on and secured, when some half-dozen jerky up-and-down motions of the whole, fill the comb with 3 or 4-lbs. of syrup. With wired frames, or combs built on wired foundation, there is little danger of breakage, but with combs unattached to the bottom frame-bar much care is required, particularly in using syrup of the proper temperature, otherwise, when filled, the weight of the syrup is apt to break down the comb.

Perfect Rest should now—from the present time until the middle of March (five long months)—be the motto of the apiary. All winter preparations should be speedily completed, and no disturbance of any kind to bees or hives should be permitted. Safe wintering, in a very large degree, depends upon strictly observing this principle. The colonies which come out best at spring are invariably those which have been spared unseasonable—*i.e.*, too late or too early—manipulations.

East Africa.—The territory of the British East African Company (which has obtained a Royal Charter), as described by Mr. Johnston in an article in the current number of the *Fortnightly Review*, is an El Dorado for emigrants, and especially for bee-keepers:—'There is,' we are told, 'a great quantity of delicious honey produced throughout the district. The wax is of very good quality, but the natives have no use for it, and merely throw it away. Cattle, sheep, and goats, are most abundant: the latter, a small and plump variety and great milk-givers. Most important in their influence on the present and future of this territory are the many continuous mountain-ranges, and the high cool plateaux, which form such a large proportion of the land's configuration, and which afford districts of considerable extent endowed with a temperate climate and a temperate flora, well watered, richly wooded, sparsely inhabited, and offering most suitable localities for the establishment of European settlers. Nowhere in Africa is there such diversified and remarkable scenery offered to one's gaze. The climate is superior in its salubrity to many other parts of the Continent. In the neighbourhood, and near the east of Kilima-njaro, the greatest heat I registered was 81°; in the warmest part of the interior, 91°. The average night temperature in hilly districts is 60°; in the plains, 68°. Except on the loftiest mountains, and on the Victoria Nyanza Lake, where it rains a few days in every month, the seasons in Eastern Equatorial Africa are regular in their divisions of wet and dry. From June to the end of October there is almost no rain, and from November to May there is an abundant rainfall during certain months. On the lofty mountains the climate, at an altitude between 4000 and 8000 feet, is that of a Devonshire summer. Above that elevation you may have it as cold as you like the higher you go.' We believe Mr. Burdett-Coutts is one of the chief promoters of the Company. To those thinking of emigrating we recommend a perusal of this highly interesting article.

Single Judging.—From a Report of the banquet celebrated at the Freemasons' Tavern, previous to the late Dairy Show, held, as usual, at the Agricultural Hall, Islington, we quote the following:—'The Hon. and Rev. A. Baillie Hamilton strongly supported the opinions of previous speakers as to the desirability of entrusting the awards in *each class to one judge only*, instead of, as usual, to two or three.' And from a perusal of the awards in each class, with the names of the judges attached, we find that in all, except the Jersey class, the one-judge system was followed and gave perfect satisfaction. The advantages of the system are evident if the judges are capable and experienced. When two or more judges are engaged in judging the same class, the probabilities are that differences of opinion will arise, especially if the competition is close and severe. Then a compromise follows, necessarily, contrary to the judgment of one or more judges. On the next difference of opinion we fancy we hear a judge exclaim, 'You had your way in the last case, it is my turn now!' At our largest apiarian exhibition—that of the late Royal Show at Nottingham—the entire work of judging was assigned to three judges only, and occupied them fully for two long days. Here there was ample employment for six judges at least. Had one judge been appointed to each principal class—Collections, Hives at 15*s.*, Hives at 10*s.* 6*d.*, Section Racks, Useful Inventions, and Feeders—we venture to think that the result would have been more satisfactory to all concerned, and certainly the responsibility would have been undivided and individual. The judging of these classes being completed, by mutual agreement, the judges could have arranged for making the awards in the remaining classes on the same one-judge system. When an award in any particular case has been called in question, and a judge has been asked his reason for making it, often have we heard the reply, 'My colleague is answerable for that award;' or, 'We did not quite agree in that case, so my colleague had his way.' Now, the one-judge system throws all the responsibility upon one man, and makes him more earnest and painstaking in his work, and, after some practice and experience, will render him a far more accurate and able judge than he would have become under the manifold-judge system. There can be no doubt that there is room for improvement in the judging at our shows. When a less experienced judge at some provincial show reverses the awards of more experienced and capable judges, made at more important shows, the evil arising therefrom is great, and most disheartening to exhibitors. Our great difficulty, no doubt, lies in the insufficient supply of capable and disinterested judges, and in the inability pecuniarily to indemnify them; for we must bear in mind that 'the labourer is worthy of his hire,' and, if we depend on those only who can afford to give their time and labour for naught, and pay their own travelling and hotel expenses, the number of really able judges will be very limited indeed. We earnestly commend the subject to the consideration of the Committee of our Central Association, at the same time being well aware of the difficulties with which they have to contend. An effort should certainly be made to give a further impetus to apiculture at the forthcoming great Jubilee Show at Windsor.

Her Gracious Majesty, our beloved Queen, the Prince of Wales, and many of our nobility and commoners,

have increased their subscriptions and donations to the Royal Agricultural Society, in order to supply a fund for extra prizes to agricultural exhibitors at Windsor. Has the British Bee-keepers' Association, which has already done so much towards spreading a knowledge of apiculture in these realms, no friends amongst the 'upper ten thousand' to advance its efforts and to befriend its cause? If an earnest attempt were made to raise an extra fund for rendering the Apicultural Department of the Windsor Show a great success, and a decided advance on all former shows, we do not for a moment doubt that it would be crowned with success.

Bacillus.—In his Harveian oration, Dr. Latham tells us that, 'One human being out of every seven dies from pulmonary tuberculosis (lung-disease). In all cases of such disease—as Koch, the German *savant*, showed—rod-shaped bacilli are found. The existence of these bacilli, however, in an injurious form, is incompatible with a healthy condition of the blood. When the white corpuscles are destroyed, or their movements enfeebled, the blood, which should resist the attack of various parasitic micro-organisms, becomes a suitable medium for their development. Dr. Latham considers that the discovery of the tubercule bacillus has not been of unmixed advantage to mankind. Patients are treated with various antiseptic remedies, and it often turns out that it is they who die, and not the bacillus.'

We certainly think the statement is true of *bees* as well as of *men*. It is, alas, too often the case, that our bees, when attacked by bacillus alvei, or foul-brood, and dosed with phenol or other antiseptics, die instead of the bacilli! Strong colonies, well provisioned and headed by young and vigorous queens, in our experience, are never attacked by—or, perhaps we should say, resist the attacks of—bacillus. It is always the weak, dwindling colonies, having old or unfertile queens, that suffer from this apiarian scourge. We therefore strongly urge upon our readers the old, and golden rule 'Keep all your colonies strong.'

Dry Sugar Feeding.—In reference to Dr. Bartrum's query on this subject (1888, p. 499), 'Whether it would not be better to adopt the dry sugar system rather earlier in the season than to use the improved Canadian feeder'—say, in September—as recommended by his 'friend and neighbour,' we must give a decided negative, for the simple reason that dry sugar feeding is stimulative, and we do not wish to stimulate to brood-rearing so late in the season. Mr. Simmius, the prime mover in dry-sugar feeding, in his *Modern Bee-Farm*, pp. 127-8, remarks that, 'with his dry-sugar feeder sugar is given in such a manner as to cause far greater stimulation to the bees than any plan of syrup-feeding.' And even in spring-stimulation he tells us that it is best to feed with syrup before resorting to the dry-sugar stimulation. Further, he remarks: 'In autumn, when surplus receptacles are removed, it is generally too early to finish off feeding all at once, and it is well to give ten or fifteen pounds of syrup immediately, and finish gradually with a 10-lb. dry feeder'; and he adds, 'Where any colonies have considerable stores on hand, but not enough to winter upon, the balance must be made up rapidly with syrup not later than the end of September;' evidently considering that time too late for stimulation. With all due deference to the Doctor, we consider the 'flower-pot' system an excellent method of upward ventilation, and of causing a thorough draft through the centre of the brood-nest, as well as chilling the bees when venturing into the feeder, the material of which is ill adapted to the retention of heat, one of the greatest desiderata in a good feeder. Mr. Cheshire, in *Bees and Bee-keeping* (Vol. II., p. 412), remarks that, 'Mr. Simmins, in order to induce brood-production, would put a dry-sugar feeder holding 3 lbs. on each side of the brood-nest. With dry sugar many bees are constantly struggling to load up by licking sugar crystals, and a regular but moderate influx of store is the result: while with the Raynor feeder, *e.g.*, a similar effect is produced by means already explained. The large bottle of syrup, directed to be given to those found needy, at the first examination in March, is to be "fed rapidly" because it is desired that this shall not stimulate to brood-raising, but increase store. Syrup thus given is lustily carried down by the bees, and deposited in the nearest place (the brood-nest) so that the unburthened labourer may return to the temporary "land of plenty" for a fresh load. The queen, instead of being incited to more rapid ovipositing, as a result of the incoming supplies, simply has the cells, which otherwise would have remained open for her service, closed against her. Before any permanent animation is produced, the supply is gone, and all lapses into its previous condition.' This is exactly the effect which we wish to produce by rapid autumnal feeding; and we fear the Doctor, by his dry-sugar feeding, will stimulate breeding and fail to procure a sufficiency of sealed store for the winter consumption of his bees. Another evil of autumnal or early spring dry-sugar feeding is, that the bees, being compelled to use a large quantity of water for dissolving the sugar, perish in numbers during cold, windy weather while on foraging expeditions. We have used with entire success, and without the slightest leakage or robbing, three Rapid feeders—the Improved Canadian, Meadows Nottingham 1st prize feeder, on the same principle as the Canadian and the Raynor. But our hives are well made, the covers fit accurately, and the entrances are reduced and guarded so that neither robber bee nor wasp can obtain entrance. Surely hives can be made robber-proof, but we are well aware that many so-called cheap hives are not so, and a well-made feeder ought not to leak.

Reviews.

Bee-keepers' Guide, or Manual of the Apiary. By A. J. Cook, Professor of Entomology in the Michigan State Agricultural College.

(*Continued from page* 506.)

In describing the compound eyes, Professor Cook gives illustrations from Gegenbower, but we think they do not give such a good idea of the structure of the eye as those of Grenacher, copied by Cheshire, and introduced on Plate IV. of his book. We have a very beautiful unique microscopic section of the eye, showing the disposition of the rods, and the decussating nerve fibrils, corroborating Grenacher's views, and showing the accuracy of his drawings. When we were staying at the College, we showed this preparation to the students of Professor Cook's class, and they were astonished at the beauty of the structure of this organ.

Professor Cook does not hold the view of a mosaic vision, which, he says, 'is now abandoned,' but thinks the philosophy of sight in insects is rather like that of higher animals, except thousands of eyes instead of two are used as one. Although their sense of colour is very keen, our author believes 'more has been made of this matter of colour than truth will warrant.' We think so, too, and believe that the experiments of Sir John Lubbock go to prove, not that bees prefer one colour to another, but that they can be accustomed to recognise a certain colour.

There is much worthy of study in this part of the chapter which refers to organs common to most insects, but we have not the space to go through them as carefully as we should wish or as the work deserves. The second part of the chapter refers more particularly to the honey-bee. Referring to food given to queens and drones, he says Schiemenz and Schonfeld are unquestionably correct in the belief that they are fed by the workers the same food that the larvæ are fed, and reasons from the fact that, as he finds the queen lays over 3000 eggs a-day weighing 3000 grams, while she

herself only weighs 2299 grams, for her to be in a position to lay nearly double her weight daily can only be possible because she is fed with highly nutritious food, which was wholly digested for her. Schönfeld found that the queen, like the drones, will soon die if shut away from the workers by a double wire cage, even though they have access to honey.

One of the most interesting paragraphs in this chapter is that referring to the glandular organs, which we find very well explained both as regards their structure and functions. Ramdohr, in 1811, discovered a pair of salivary glands in the thorax, and two other pairs were discovered by Meckel in 1846. These have been fully described by Siebold. Their functions are well known. Still Cheshire says on page 72, 'and yet dense ignorance respecting them is common to the present day, even such an accomplished German apiculturist as Berlepsch failing to mention them.' Had Cheshire looked at page 136 of *Die Biene*, by Berlepsch, he would have found that not only does this distinguished German mention them, but that he also describes their functions. Schiemenz goes into the matter very carefully, and in an elaborate monograph, beautifully illustrated, he endeavours to show that they produce a secretion which is the food of the larvæ and queens. This view has been proved to be incorrect, and Schönfeld has fully demonstrated that the food of the larvæ is, as Dufour first pointed out, digested by the workers. Moreover, any doubt as to this being the case has been removed by the experiments of Dr. A. de Planta, who shows that the chyle food of queen, drone, and worker larvæ varies. Professor Cook explains this very clearly, and then goes on to treat of the honey stomach with its four-lipped mouth, and shows how the bee can either feed herself or store honey at will. We ourselves do not believe that the glands supply the larval food exclusively, although we think that secretion from these is added to the chyle food given them. Also, why do the queen and drones have glands? for if they get food as a secretion they do not want them. This is how Professor Cook sums up the matter: 'Before leaving the subject, it seems well to remark that it would appear that the old view of Dufour, so ably advocated by Pastor Schönfeld, is, despite the arguments and researches of Schiemenz, the correct one. The queen, drone, and larvæ do not get this food as a secretion—a sort of milk—but it is rather the digested pollen or chyle modified, as the bees desire, by varying their own food. In addition to this albuminous food the queen and drones also take much honey; thus they need the glands which furnish the ferment that changes cane to reducible sugar, and they have them. If all honey were fully digested, then the drones and queen would not need any glands at all. The fact that the pollen that the larvæ do get is partially digested is further proof that this is chyme, or partially digested pollen.'

The legs of bees, with their antennæ—cleaners, claws, spines, and beautiful pulvilli, are fully described and illustrated, as are also the mouth parts and sting. He does not believe that the poison is dropped into the cells to preserve the honey according to Dr. Mullenhoff's theory, but thinks the formic acid in honey doubtless comes from the honey stomach.

Chapter III. is devoted to Swarming and natural methods of increase. Alluding to the piping of queens, he agrees with Landois that this is a true voice made in the cells, and even also by a queen whose wings are cut off. He says it is usually asserted that bees do no gathering on the day they swarm previous to leaving the hive, but that is not true. Mr. Doolittle thinks they are just as active as on other days. The reason for clustering of the swarm, he says, is, no doubt, to give the queen a rest before her long flight.

Speaking of honey, he says it is 'digested nectar.' This nectar contains much water, though the amount is very variable—a mixture of several kinds of sugar and a small amount of nitrogenous matter in the form of pollen. Nectar is peculiar in the large amount of sucrose or cane sugar which it contains. Often there is nearly or quite as much of this as of all the other sugars. We cannot, therefore, give the composition of honey; it will be as various as the flowers from which it is gathered. 'Again, the thoroughness of the digestion will affect the composition of honey.' He thinks it likely that incomplete digestion and the possible variation in nectar make the determination by the analyst either by use of the polariscope or chemical reagents a matter of doubt. He goes very fully into the action of honey under the polariscope, and shows that too much reliance should not be placed on this test. He finds the specific gravity varies from 1·40 to 1·50. Honey will generally granulate when the temperature is reduced below 70°. Some honey seems to remain liquid indefinitely. Granulated honey is almost certainly pure.

In speaking of honeycomb he says, 'The late Prof. J. Wyman demonstrated that an exact hexagonal cell does not exist. He also showed that the size varies, so that in a distance of ten worker-cells there may be a variation of one cell in diameter, and this in natural, not distorted cells.' 'This variation of one-fifth of an inch in ten cells is extreme, but a variation of one-tenth of an inch is common.' We have ourselves carried out a large series of measurements which fully confirm this, and we hope soon to be able to publish the results. He says, as we have also maintained, that bees change from worker- to drone-cells, not by any system, but simply by enlarging and contracting. The transition cells are usually of four rows, although sometimes there are two or as many as eight.' Prof. Cook says, 'An English writer criticises Langstroth's representation of these irregular cells, and adds that the angles can never be less than 100°. This is far from the truth, as I have found many cells where an angle was considerably less than this.' We have also got a large number of impressions taken direct from the comb showing that Langstroth is right. Some combs which we last year exhibited at the Conversazione of the British Bee-keepers' Association had several rows of perfectly square cells which would represent angles of 90°.

Referring to the number of cells to the square inch, he says, 'A recent English author, after stating the diameter of the cells, adds, "The statement, many times made, that twenty-five and sixteen of these respectively is erroneous, as they are not square." He says these are $25\frac{1}{16}$ and $18\frac{15}{16}$. After many counts he thinks he should have used his eyes rather than his mathematics, for he finds worker-cells per square inch vary from 25 to 29, and drone-cells from 17 to 19 per square inch. Our English author seems quite to have ignored the fact that because of this great variation and for convenience of calculation the above figures were adopted as an average.'

A very interesting paragraph on pollen and propolis concludes the first part of the work, which occupies 163 pages. It is not rambling and spun out like the writings of some authors, but is concise, clear, and contains all of any value to the bee-keeper. It is also written in a Christian spirit towards those from whom the author differs.

The second part is practical, and is devoted to the management of the apiary. Here the principal hives, appliances, and various methods in use in America are described very fully and illustrated. In this part there is also much new matter added, making it very complete. The Langstroth and Heddon hives have full justice done them, as well as other hives in use in America. Our English bee-keepers will find much useful information, although some of the appliances and methods may not be suited to this country.

All Prof. Cook says as to management of hives for surplus is as useful for us as for our American friends,

but we do not encounter the same difficulties in wintering as they do, therefore we do not need to take the same measures for the protection of our bees. Our methods of open driving and transferring are also simpler than theirs. The chapters following are full of practical information, and from them much may be learned. Honey plants are treated more completely than in any other work; diseases and enemies of bees, with what is known about them, have also proper attention.

Prof. Cook is the leading scientific authority on all that concerns bees in America, and, as most of our readers know, is a pleasant writer. Being Professor of Entomology at the State Agricultural College in Michigan, he has the opportunity of testing methods and appliances at the experimental apiary attached to the College, some of the advantages of this being apparent in the book before us. Unlike a recent author, who not only jealously withholds the names of many of the inventors or advocates of particular methods, but in many cases claims them as his own, thinking no doubt that he is the man, and that wisdom will perish with him, Prof. Cook is scrupulously particular in giving names. This is as it should be, and we think it shows a much more noble spirit to give glory unto whom it is due than to rob those entitled to it. Altogether the work is a great improvement on the former editions, and is one that no bee-keeper should be without. It is printed in clear type, on good paper, and contains 222 illustrations. The price is 6s., and Mr. Huckle is agent for its sale here.

Foreign.

CANADA.

The annual Industrial Exhibition was held at Toronto on September 10th and following days. By all accounts (and we have had several) the honey show in connexion with it was a great improvement on that of last year, although the amount of honey shown was not so great. The bad season made itself felt, and there were no gigantic exhibits, as the total amount of honey was not much over 5000 lbs., of which 300 lbs. were comb. There were only three exhibitors of honey in the various classes, viz., R. McKnight, who had a total of 3000 lbs.; R. N. Smith, 1300 lbs.; R. F. Holterman, 1100 lbs. We are very much astonished that, in an exhibition where such good prizes are offered, that there should be so few exhibitors, and is a great contrast to our shows, where competition is much greater. We find the total amount taken in cash prizes by these exhibitors is:—R. McKnight, $87.00; R. F. Holterman, $42.50; R. N. Smith, $30.50. Whatever may be said with regard to the scarcity of exhibitors, their exhibits deserve great praise, and the display was a great improvement on that of former years. We ourselves remarked the heavy appearance of the stands and the large gaudy labels on the tins, so characteristic of the the American canned goods trade, and suggested that our style of showing honey in bottles was very much more attractive. This has proved to be the case at the Toronto Exhibition, and we are told Mr. McKnight's exhibit, which was put up in English glass jars, not only easily carried off the large prize of $50—or 10*l.*—but was a feature in the show, and attracted much notice. We have been favoured by Mr. McKnight with a photograph of his stand, and can quite understand that it should be appreciated. It is more like our displays than anything there was either at the Toronto Exhibition last year or at the Colonial the year before. From what we can see in the photograph the extracted honey is put up in glass jars of one pound, with metal screw tops, and arranged in pyramids, with here and there a section. Very few cans appear, and these are used principally as supports for something more attractive. To relieve the monotony of 'Honey, honey everywhere,' pots of flowers are tastefully arranged, and at the further end, commanding a prominent position and surmounting the exhibit are arranged the Union Jack and other British flags, showing our friend to be loyal to the 'Old Country.' This special prize was offered because hitherto it was felt that the honey show at this fair was not marked by much taste in its general get up. There was nothing special in sections, and these were conspicuous by their absence, there being in all 300 lbs. of comb honey.

Mr. Smith has also a good exhibit from Muskoka, and it shows that this district, although poor for agriculture, is good for bee-keeping, the honey being of the finest quality. In another department Mr. Smith exhibits prepared specimens of the wild flowers of Muskoka, which show the capacity of the district for honey production.

Mr. Holterman has also a very good exhibit, and amongst other things he shows an assortment of fruit preserved in honey, also cakes and pastry, in which honey was an ingredient.

There was only one exhibit of appliances, that of Messrs. Gould & Co. It was good, and contained everything necessary for a bee-keeper.

We are glad to find the practice we so deprecated last year, viz., that of selling pieces of comb honey for five cents on a piece of section was abandoned, and, we understand, this made the honey department much more enjoyable. The judges were Messrs. J. Dunn, Allen, Pringle, and W. McEvoy. Messrs. D. A. Jones & Co. did not exhibit at all, although hitherto they have generally been the largest exhibitors. The class for 1000 lbs. of comb-honey found no entry. On the whole, although the exhibition was smaller, it was a great improvement on those of former years.

FRANCE.

According to the *Apiculteur* of Paris, the weather in September has been fine, but, excepting in a few localities, bees could not find anything worth mentioning to bring home to their hives. Consequently, adds our contemporary, the state of affairs does not improve as we are approaching winter. Following up this subject, *l'Apiculteur* says, 'Bee-keepers who love their profession are not only more than ever anxious to keep it up, but are striving as much as they can to extend their sphere of operations. But whilst, on the one hand, they are made aware of the disappearance of several plants and vegetables, the blossoms of which contributed to the welfare of their colonies, they notice, on the other, the introduction of others which, like the beetroot, adds to the production of sugar, already the most powerful competitor on the market.' In view of this change, *l'Apiculteur* urges all friends of apiculture to pull together, and to adopt every possible means that a combined action may tend to keep up a brisk demand and supply of the products of bees.

BELGIUM.

Judging from statistics just published by the *Apiculteur* of Paris, Belgium imports honey and wax to a considerable extent, the figures given by our contemporary showing that the honey imported between 1867 and 1886 was 14,060,038 kilos. valued at 12,528,183 francs; whilst the wax imported during the same period had been 4,528,871, valued at 15,127,489 francs.

Like all Northern countries, Belgium consumes a large amount of honey; and seeing that, notwithstanding the assistance given by the Belgian Government, the native production does not increase, owing, it is alleged, to large tracts of land being now devoted to the growing of sugar beet-roots, the *Apiculteur* considers that in making an attractive display of their products at the present International Exhibition at Brussels, French bee-keepers took a very wise step, considering that they are next door to the Belgian market, where a fair demand for their surplus stock is to be found.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' *All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, Kings Langley, Herts (*see* 2nd page of Advertisements.)

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

HONEY IMPORTS.

The total value of honey imported into the United Kingdom during the month of September, 1888, was 1114*l*. —G. Metcalfe.

IN THE HUT.

'To point a moral, and adorn (?) a tail.'—Ye Stynge.

[1850.] I feel to quite envy 'A. E.' for having made peace with Scotland, and now doubly regret my inability to accept an invitation to the show at Sydenham, so that I also might have been able to show our friend from across the Border that nothing but good feeling and fellowship is intended in any remarks made in the hut.

When we introduced an observatory hive into the hut, we reckoned somewhat without our host—little thought we that our stove, warming all up so nicely in the depth of winter, would have to be dispensed with, for fear its warmth arousing our bees into spring activity. Lit an hour before a meeting, one could bring the temperature up to 65° from freezing, and now the place must either be deserted or we must sit round the tapestry-covered table with our feet on the damp-proof linoleum, said feet in a hive-lift perhaps, packed with chaff cushions; or must chat and chaff each other clad in overcoats and mufflers. Seated on quilts too prone alas! to adhere to one's best pants by lovely lines of propolis sweetly softened to the sticking point by posterial caloric. We must look to 'smokers' for our heat it seems this winter (by the way, wouldn't 'The Smoker' be a good *nom de plume?*)

'*Feeding* is such sweet sorrow,'

but much of its regret has been softened and toned down by using one of Carr-Bebington rapid-feeders, cheap, capacious, and syrup-tight, when surreptitiously filled at night. I found the square zinc-feeder, the long tin, and the clogging bottle, were soon overtaken by, and had to give place to it. It is made watertight by paying the seams (to use a nautical phrase) with hot wax and rosin.

A few days ago, when riding in the train through Belton, near Great Yarmouth, I noticed a collection of empty long hives, which at first I took to be sheep-feeders. It was a pitiable sign of the times, close as they were to a splendid stretch of ling. This tinge of sadness was soon dispelled on our arrival at the next station (St. Olave's), where about half-a-dozen skeps were all alive; the bees were dancing about in the sunlight like a column of gnats. I know nothing more forcibly carrying the mind homewards than the sound of the steady flight of bees.

I see by the *Berkshire Bee-keeper* that eucalyptus honey is praised as a highly medicinal compound. If we don't mind we shall find in the market eucalyptus hum—, sophistication somewhat suggestive of the messes sold some time ago by Horehound & Co. I ought to be the last to call into question the medical potency of honey, but if we are to have eucalyptus honey I want us to 'see that we get it.' I wish to throw light on what might, in unscrupulous hands, perhaps, develop into a deception. I do not wish us to make believe of going to the blue gum-tree for what we can get at home.

'Call it not wasted the scent we lend
To the breeze, when no step is nigh,
Within the infant rind of this small flower
Poison hath residence and med'cine power.'

No doubt true eucalyptol is strongly medicinal, but I think it is only so by the presence in it of what is termed a terpene compound, similar to thymol and pinol. The great medical value of such principles, I am pretty sure, could be equally efficaciously imitated by the addition of a few drops of pure terebine to any syrup we like to take, and terebine or the eucalyptol and pinol should not be taken inwardly, excepting under medical advice, because of their strong action in the renal region. A few drops of pure terebine in the bath once used will be continued, and a little of it poured on hot water gives off a vapour very beneficially inhaled in bronchial and asthmatical affections. But what has this to do with bee-keeping? This brings me to the point, simply that I believe foul brood may be prevented, and perhaps cured, by the addition of pure terebine to syrup used in feeding infected stocks. I consider it quite as antiseptic and germicidal (Shades of Api——!) as either carbolic or salicylic acid, much pleasanter than either: sprayed on infected combs it cannot be other than beneficial by reason of the oxygen it gives off. The idea may be considered as rather far-fetched, yet, knowing how our bees' trip to the heather does them 'a power of good,' constitutionally, there is little doubt that the odour of pure terebine in a hive will be equally beneficial to them as the smell of pine-woods is to the sickly and convalescent at Torquay, Braemar, or on Norwegian and Alpine fir-clad slopes.

N.B.—Don't use pure terebine as used by painters, *that* is a dark oily nasty substance; and if the chemist wants to give you spirit of turpentine (terebinthus=turpentine) ask for pure terebine, rectified turpentine, a clear white liquid, pleasantly redolent of newly-sawn wood. If my remarks on this substance are found to be of service, I shall maybe merit the soubriquet of—X-Tractor.

ONE SUCCESS IN 1888—HUNDREDWEIGHT HIVE.

[1851.] I sent you an echo somewhere in the beginning of August; with your kind permission I should like to continue the tale, as I have only just squared up for winter. I have not had time before. In that last 'Echo' I had only just begun to take honey. I was like all other bee-keepers till that time, hoping, waiting, grumbling, till the end nearly of July. I had, however, not fed the bees at all excepting two swarms, but from that time, mind you, it was full time and over-time with the bees and your humble servant. To begin the hundredweight tale, which I suppose some will hardly believe: I started this year with five frame-hives and one skep, which gave two swarms,—first, June 7th, second, June 18th. To take the old stocks in frames first, I will briefly give results: No. 1 hive, 44 good completed sections, and 20 lbs. extracted from outside combs and unfinished sections, making 64 lbs. No. 2, 30 sections, and 28 lbs. extracted, making 58 lb. No. 3, 16 sections and 24 lbs. extracted, making 40 lbs. No. 4, 20 sections and 14 lbs. extracted, making 34 lbs. Swarm first, 10 sections and 20 lbs. extracted, making 30 lbs. Swarm second, all extracted from twenty frames, 35 lbs.

Now readers will say, Where is the hundredweight hive? I have left it (like the good wine) till last, as I think, in my humble opinion, it is worth a little longer description. It is a stock of hybrid Italians, and raised themselves a queen last year. It was worked on ten frames parallel; there was not enough room for the bees, as they got behind the division board (about two inches

to spare), and filled it with combs. The *real Jubilee* queen also spoilt a few sections by laying in them: never mind that, however, I took the sections from it in this order—I mean all properly sealed and fit for market:—On July 23rd, ten; Aug. 1st, eighteen; Aug. 8th, fifteen; Aug. 13th, thirty-one; Aug. 25th, six; Sept. 5th, ten. I took off also about four dozen nearly finished, which weighed about 30 lbs., and also extracted about 10 lbs. from outside combs: that put together means 90 good sections=90 lbs., and 40 lbs. more with extracted and unfinished sections, making 130 lbs. Is that not grand, Mr. Editor? and it is true, and all sold and at good prices, something like the old times come again I mean price of honey. I don't know if any one has taken honey in that quantity; I consider that hive of bees and queen quite a novelty for this wet year. I shall never have the heart to kill such a queen as that: she must live her natural time, pay or not in other years, for being so good this year. I may remark that I have been able this year to sell unfinished sections, and anything almost, so scarce is comb honey. At one time that hive was working 105 pound sections, ten frames at bottom and some comb behind division-board.

There are a good many straw-hive bee-keepers about here. I have driven about thirty lots and found a good deal of honey in most of them: some perfect slabs, with hardly a bit of brood; some weighed 25 to 30 lbs.

In conclusion, could you kindly inform me if there is a 'Dorset Bee-keepers' Association?' I should like to join it; and if there is not, how could I obtain a third-class expert's examination, as I should like to try for a certificate. I may say this is a very dry air, a regular invalids' country, near Bournemouth, and about same air. It is sometimes called 'England's Mentone;' certainly it is a wet summer place for bees. Last year was much too dry for honey in any quantity; it is mostly heather all round here, but we get a good deal more sun than some places. Last Monday, October 15, the bees were out and bringing in pollen by 9 in the morning, and all of my hives are taking in pollen now. I have packed them all for winter, but they are all out like spring yet. I have successfully introduced one Carniolan queen and two Italian to stocks of driven bees. I hope this is not too long for you (but I don't trouble often), &c.—A. Dabner, *Parkstone, Dorset.*

[There is a Dorsetshire B.K.A., with Mr. W. H. Dunman, 4 Temple Terrace, Dorchester, as hon. secretary. —Ed.]

TO PREPARE HIVES FOR WINTERING.

[1852.] About two weeks after removing the surplus cases, whether comb for extracting or sections, you will find some of the colonies short of stores. When the brood are all hatched out is the proper time to weigh them. The weight of the brood is sometimes mistaken for honey. Again, late swarms and second swarms will be found light. The sooner they are fed up to the proper weight for wintering the better. A strong swarm will require about 20 lbs. of honey or fine sugar syrup to winter. If you want to winter small swarms, contract them by division-boards to four or five frames, according to the number of bees. They ought to cover nearly all the frames at this season of the year. If there are not bees enough to cover four frames, unite them with another small swarm or nucleus; about 10 lbs. of honey will carry them through. Another method besides feeding is to equalise. Then take a frame from those that are extra heavy and exchange with a light one; but, unless they are extra heavy, it is best to let them alone. When you have them all fed or equalised, the next thing is to prepare them for winter quarters. For cellar wintering there is not much packing required. Langstroth frames don't require winter passages cut through the comb. For cellar wintering, only a winter passage under the quilt, by making a bridge with two half-inch pieces laid across the top of the frames under the quilt, which ought to be done before cold weather sets in, to give the bees a chance to seal everything tight by propolis, as upward ventilation is not necessary. Put on your cushions to keep the brood-nest warm until they are put in the cellar; then you may take them off if your cellar is at the proper temperature, viz., from 40 to 45° in the coldest weather. Contract the doorway to keep them warm and prevent robbing, but open wide when put in, and if you see any signs of dysentery, clean out all dead bees and put some air-slacked lime in on the bottom board as far back as you can, and also scatter some on the cellar floor. If you have your hives well stored with *good honey*, a good swarm of young bees, a good queen—not over three years old, good comb, viz., not drone-comb, and free from disease, a cellar that is warm and dry, there is every chance they will come out all right in the spring.—Dr. Duncan, *Embro, September 10th (Canadian Honey Producer).*

NOTES ON BEE HIVES.—SECTIONS.

Queens.

[1853.] I believe the compiler of 'Useful Hints' (in a recent number of the *Journal*) alludes to a remark I made a little while ago respecting the size and appearance of queens and workers. I do not think many of the readers of the *B.B.J.* will 'strain the gnat out and swallow the camel,' or, in other words, I thought every one would understand me to mean that the outward size of some queens was so similar to that of workers that they could not be distinguished from workers, and that probably the Rev. George Raynor had made this oversight in the experiment he so kindly tried and related upon reading my remarks about his good paper on queen introduction. If I have said anything amiss, I am sorry.

I hardly know what the editor alludes to in his foot-note to my 'Notes on Bee Hives' in the issue of the 6th instant, but I conclude that both he and the compiler of 'Useful Hints' are under the apprehension that it is of every queen-bee that they have seen that I refer to, while I am referring to those that cannot be discovered in a hive from their similar size and appearance to workers. I think every one will readily admit that the size or stature of queens is not always equal, but is various, like the human race. I heard of a queen being about two inches long, but did not see it, and hardly believed that it could be such a great length; and I had a queen sent per post to me by a friend that was some lines less than the ordinary worker-bee: moreover, it had travelled over many counties, and reached here safe and sound (to all appearances) alone and alive, to my great delight and wonder. Perhaps Mr. Editor has never seen a queen the same size as a worker, and that is what he really means in his foot-note. Who would believe that there was or were such persons as General Tom Thumb without actually seeing them? Of course when we do see such a queen we may make out by aided or unaided vision the general characteristics of queen-bees, according to Shuckard, &c., &c.

I think I have said sufficient to cover the above, but shall reserve some remarks about false queens, fertile workers, and some other monstrosities of the bee-hive.—T. Bonner-Chambers, F.L.S. Lond., *Tref Eglwys, Caersws, Montgomeryshire, September 27th.*

P.S.—I know there are several methods of finding a queen in a hive besides simply looking over the frames in the usual way, and I judged that this latter plan was one resorted to in the particular instance alluded to.

[We intended in our foot-note on page 439, alluded to above, to convey to our readers what we wish to emphasize now, 'that we have yet to see a queen that *cannot be distinguished in outside size and appearance*

from ordinary workers.' (The words italicised are yours.) We have seen many queen-bees that were quite 'Tom Thumbs,' especially imported Cyprians and Syrians in early summer. The same queens have expanded and become very large and prolific after being introduced to good colonies: notably one Syrian, that was the largest queen of any race we ever saw, although not quite 'two inches long.' But all these queens, diminutive as they were, had the 'outside appearance' of *queens*, and by a bee-keeper of average experience and capabilities could be readily 'distinguished from ordinary worker-bees;' and we cannot assent to the doctrine 'that it is sometimes *impossible* to say a hive is queenless' or otherwise, although in some cases it may be difficult.—ED.]

Echoes from the Hives.

Withton, Taunton, Oct. 13th.—I to-day heard of a bee-keeper near the hills who took over 70 lbs. sections from two hives; but, excepting near the heather, there is scarcely any honey about here.—T. HOSFOERD.

Egloshayle Road, Sladesbridge, Cornwall, Oct. 18th.—A very, very bad bee season in this locality. I have had no surplus, but having fed well, my little favourites are well up for winter.—H. LANDER.

Clonmel, Ireland, Oct. 20th.—I am thankful to be an exception to the vast majority of bee-keepers in this most unpropitious season. I have disposed of 783 1-lb. finished sections, and have on hand for extracting more than 800, more or less filled with honey. Besides this, I have about 300 lbs. of extracted; and out of the number of my sixty-eight stocks there are only six or eight requiring assistance, and I have not taken any from the brood-chambers, and all was produced by thirty-three stocks. My success would be less a marvel to me were it not that all my neighbours are honeyless.—GEORGE A. PROCTER.

Somersham, Hunts, October 20th.—Having visited a great number of the bee-keepers in this and the neighbouring county of Cambridge, and obtained approximate results of the season, I am able to form a pretty accurate idea of the state of the apiaries and of the future prospects of their owners. The results in both counties are truly deplorable, but in spite of the extraordinary season which we have experienced there are two bee-keepers in Cambridgeshire, one in S.W. and the other in S.E. Cambs., who have each made a profit of about 4*l.* by the honey from about a dozen stocks. In my own immediate neighbourhood the general opinion is that there never was a worse season. I have examined a great number of colonies lately, and I never found so many in such an almost hopeless condition, and I am much afraid that owing to the sparing manner in which food is given the loss of stocks in skeps before the spring will be great. In many cases where there is a disposition to feed, it has been delayed too long in the hope that as no surplus has been taken, there must be plenty for the bees. I took empty supers off about a dozen skeps this week for a friend, and I never saw a look of more blank despair, particularly when I said I did not believe the lot if taken up would produce twenty pounds of honey. For use in my own apiary I prepared early in the spring 400 sections, and hoped to get that quantity at least, and as much if not more extracted, but my total take has been five pounds of buckwheat honey from several sections off one hive. I had near some buckwheat in the fen. Taking several stocks down the fen has saved me considerable feeding, though my stocks at home have had to be liberally fed, with the result that my wife insists on a separate sugar account after this season. Other seasons I have fed comparatively little, but this season it has been sugar! sugar!! sugar!!! However, I am in hopes that all the trouble and expense to which bee-keepers are now put will be amply repaid by a bright and sunny season next year.—C. N. WHITE.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

JOHN STUART.—*Preserving Swarms.*—In the circumstances you are placed it might be advisable to clip the queen's wings: this might help you to preserve your swarms. We would suggest that introducing queens and, in fact, all the operations of the apiary, should now be postponed till the winter is past. Let the bees have rest till the coming spring. 2. *Moving Bees.*—See reply to 'P. C.'

P. C.—*Moving Bees.*—You may remove bees any short distance in winter when they are not flying. It is well to place a board or a sheet of glass on the flight-board leaning against the front of the hive to call the attention of the bees to their new location on the first warm day when they fly, or some may return to their former place.

J. P. SMITH.—*Uniting.*—The time has now arrived when the manipulation of bees should cease, and when quietness should reign in their hives till the coming spring, and therefore it is desirable that all operations in the apiary should be postponed till that time arrives.

E. THORNTON.—*Illustrations of Bee-keeping for Children.*—The Rev. C. Anderson, formerly secretary of the Somersetshire B.K.A., published in 1886 a series of spirited engravings illustrating the alphabet with letter-press descriptions. The book was entitled *The Bee-keeper's Alphabet.* The engravings were considerably above the average of such productions, and were evidently the work of one who had an aptitude for drawing combined with a full knowledge of bee-keeping. These we considered at the time would make a pleasant and a useful present to young bee-keepers. The publishers were Simpkin and Marshall; the price, one shilling.

POSTULATA.—*Sugar.*—No 2 sugar would be found suitable for making syrup. No. 1 for dry-sugar feeding, which last operation is not to be thought of at present. All feeding should now be finished. If any should be required, let sugar-cake be used.

T. H.—*Absence of Brood.*—We consider it probable that your hive has a queen. The lateness of the season would account for the absence of brood. It will be desirable to postpone all operations now till the spring, when you will have the opportunity of overhauling your stocks.

J. R., *Roseacre.*—1. *Decoy Hives.*—If empty hives are left in a garden to act simply as decoys, we do not think that such conduct is either honourable or neighbourly. 2. *Law on Bees.*—A swarm of bees flying from a person's hive would be considered his while he kept them in sight. If the owner lost sight of them he could not claim them. If bees swarm in another man's land, and were removed by the owner, the latter could not be proceeded against except for trespass. The owner of the bees might, however, be prevented from entering to take away his bees.

H. D. B.—*Burnt Sugar.*—It would be injurious to feed bees in cold weather with sugar burnt in boiling.

H. J. S.—If the bottles containing the syrup are carefully corked, it will not hurt if kept to the following spring. Sealed honey and syrup may be used also in the spring, but it is desirable to extract the unsealed.

CHARLES J. RYAN.—By this time we should consider that the bees have taken a sufficiency of food for

wintering, and that it would be desirable to remove the feeders. The entrances of your hives being so small would not allow the ventilation required when using enamel-cloth, we therefore recommend that it should be removed for some more porous covering.

W. Daniels.—*Prize-takers.*—We consider that when makers of appliances obtain prizes setting forth that the articles exhibited are to be obtained at a published price, it is their bounden duty to furnish the public an opportunity for procuring them at the prices stated. We believe that it is on such an understanding that the prize is awarded to them.

Apis Hibernicus.—*Clover.*—What is known and grown in America under the name of sweet clover is known in this country as Bokhara clover, Melilotus, Sweet melilotus, or White melilot, botanically named *Melilotus alba* (Lamk.), *Melilotus vulgaris* (Willd.), *Melilotus leucantha* (Koch). This plant has a rather wide geographical distribution, extending from Europe (including southern England), Siberia, West Asia, to India, and introduced to North America. The official melilot (*M. officinalis*) has yellow flowers, and grows two to three feet high. The Hungarian Melilot (*Melilotus altissimus*) is a very tall-growing species. There is also a blue species (*M. cærulea*), often seen in old gardens.

Albert Jones.—The seed 'Amateur Expert' is kindly offering is that which is called in America Chapman Honey Plant.

John Watson.—*Condemned Bees.*—The method you have adopted is correct; there is little doubt that the bees, if warmly covered up, will survive the winter.

Received from Abbott Bros. a sample Bee-keepers' envelope.

*** *Several important communications are postponed till next week.*

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin
Appleton, H. M., 256a Hotwell Road, Bristol.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Burtt, E. J., Stroud Road, Gloucester.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley & Flood, 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Benton, F., Laibach, Carniola, Austria.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

METAL ENDS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baker, W. B., Muskham, Newark.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Edey & Sons, St. Neots.
Godman, A., St. Albans.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.

COMB FOUNDATION MILLS.

Godman, A., St. Albans.

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Editorial, Notices, &c.

GLASS SECTIONS.

On several occasions (and more recently on page 490, No. 1830), Mr. T. Bonner-Chambers has brought before our notice the subject of glass sections. These have occupied the minds of bee-keepers for a number of years past, and various forms have been suggested and adopted, only to fall into disuse after a short trial.

There is no question about it that the glass makes an attractive package, but as yet there is much room for improvement before such sections can be universally adopted. The disadvantages have been several; such as the great difficulty in getting sheets of glass to cut up to the same thickness throughout, that many slips are entirely useless. Then we have the cost, which is far in excess of the American one-piece; thus, taking the suitable quality of glass, costing at home not less than threepence per square foot, we get eighteen strips (each 2 in. by 4 in.) to the foot. Requiring sixteen of such strips for four sections, and allowing for breakages and pieces too thick or uneven to use, without counting labour, we do not see how to get the cost down to less than one penny per section, amounting to the nice little sum of four pounds, three shillings, and fourpence per thousand! What bee-keeper can afford to add a card or other fancy case to comb-honey worked in such an expensive receptacle? And yet in a letter from Mr. Chambers, speaking of his own sections, he says: 'I believe they can be produced much cheaper than wood ones . . . . either cast, or from slips with ground edges.' Our correspondent does not appear to have calculated the cost, as above, nor to have considered the additional expense of having the edges ground, or the whole cast in one.

Again, he goes on to say: 'To clean them they simply require boiling, then they can be used over and over again.' Few sections will ever find their way back again to the producer, but where what few an amateur may produce are required at home, of course there must be a saving, could a really good glass section be secured. Mr. Chambers' section being made up with four unattached pieces of glass shows, in our opinion, a very weak point, as there will be the fear of frequent breakages in handling such a disconnected frame. We are aware that the comb attachments are not always sufficiently strong to justify one in the hope of being able to move the sections of comb as we do those in wood; and, moreover, it frequently happens that, however well attached in the first place, the glass will often leave the wax entirely, showing the unbroken and polished margin of the comb; and where the honey is stored close against the glass, as frequently happens, we have then a mishap that can not be remedied, and the section is unsaleable.

We have yet to mention one other serious drawback, common to all glass sections, and that is, the bees are not so willing to enter the super as where only wood is present; but, on the whole, we are aware that the drawbacks are likely to be somewhat compensated for by the greater demand for honey put up in the more attractive form; but it is imperative that the first cost be brought within the limits of strict economy.

To give the glass section its due, we may also state that there is nothing more interesting than the mass of busy wax workers and honey storers that can be observed from above. Upon gently lifting the quilt, we see hundreds of busy workers gathering the wax-scales from their 'pockets' and laying them on the cell-walls by a process that is then more readily observed than by any other form of glass hive that can be used. The manner in which their long red tongues first moisten the cell-walls before laying on, or giving out the honey in perceptibly increasing quantities, is also remarkable; and if only for the sake of this pleasant sight, when the real activity of the busy bee is exhibited in the highest degree, during a good spell of honey weather, we would advise every bee-keeper to use at least one super of glass sections.

The first attempt we know of to introduce glass in sections was made by Mr. Raitt, who adopted a glass bottom rail more than ten years ago. About the same time Mr. Simmins brought out sections with glass rails both top and bottom, with the upper rail slit in two for receiving the foundation. The side pieces of these sections had a saw-cut across top and bottom at about $\frac{3}{16}$ in. from each end, wherein the glass fitted sufficiently tight, that the sections were even more rigid than the one-piece, while they were always true to square. Mr. Simmins has not been able to find much sale for

these, as the cost was a serious hindrance to their introduction. We understand, however, that an appliance-maker is making arrangements for introducing glass sections in various forms on a greatly improved model for another season, and we are promised a full description as soon as he can get them completed.

THE JEWS AND HONEY.

The reference 'Amateur Expert' makes on page 508 to leaven put us in mind of *Samuel Purchas*, and his book entitled *A Theatre of Politicall Flying Insects*, in the second part of which are 'Meditations and Observations, Theological and Moral.' On page 313 we find the following:—'It is observable in the old Law, that God hated the very resemblance of the sinne of pride,—He would have no honey mingled in their offerings: "*Ye shall burne no leaven, nor any honey in any offering of the Lord made by fire.*" Indeed, Leaven is sowre, but is there in honey that should offend? Why no honey? Because honey, when it is mingled with meale or floure, maketh it to rise and swell; therefore the people of *Israel* must mingle no honey in their offerings: this was to let us see God hateth the resemblance of the sinne of pride.'

THE WEATHER.

At the meeting of the British Association for the Advancement of Science held at Bath, Mr. E. J. Lowe, F.R.S., read a short paper on the effects of the weather of 1888 on the animal and vegetable kingdoms.

He first drew attention to the extraordinary mortality amongst birds and the fearful increase in the number of slugs and insect pests during the present summer near Chepstow. This year there had been no necessity for nets, as the fruit had been untouched by birds, for there were none to eat them. The long deep snow in February destroyed many birds, but that did not account for the absence of so many summer birds. Only four or five swallows could be seen at one time, and only a solitary landrail had been heard. There was almost always an increase in the number of slugs and insect pests after a cold winter, and this year that increase had been enormous. All seedling plants, vegetables, leaves, and flowers had been destroyed wholesale, and great damage had been done to wheat, grass, and other agricultural crops, but what had been most noticeable was the destruction by caterpillars of all the leaves of the oak. Thousands of oaks had been without a leaf, bare like winter, and now they were only just coming into leaf again, but unfortunately a second crop of caterpillars was noticed on Sunday last to be resuming the attack on the new leaves. There had been a great increase amongst destructive slugs of various kinds, and earwigs, woodlice, ants, butterflies, and beetles, had also been unusually abundant, but there had been an absence of wasps, and only a very few moles. Snakes and adders had been very numerous. Early sown peas were twenty-one weeks before they were fit for the table, and all fruit had been very late, many gooseberries being not yet ripe, and currants being still abundant. Pears were scarcely swelling, and of mushrooms there were none. There was an enormous crop of nuts. The hay-crop had been the latest ever known, much remaining unharvested at the beginning of the month. It was worthy of remark that many delicate plants were uninjured by the cold of last winter.

BRITISH BEE-KEEPERS' ASSOCIATION.

Quarterly Conversazione.

Mr. R. A. H. Grimshaw in the chair.

Rev. J. L. Seager said that he had been asked to read a paper on the subject of County and District Associations, but that he had declined to do so. He had, however, consented to open a discussion, and he hoped that, without committing himself to any definite scheme, he might be able to say enough to lead the way to something practical being done in the matter. He thought the time had arrived when Associations, other than County Associations, should be affiliated to the B.B.K.A.: under the present rules that was not possible. Fifteen years ago, when Mr. Peel was at the head of affairs, the present system of county divisions was started, and arrangements made which precluded the establishment of a second Association in any County, however large it might be. Experience showed that the time had now arrived when it would be necessary to break up the counties into smaller areas, or make a different definition of districts. He was quite aware that there were a great many difficulties to face in attempting to alter what had existed for several years. He was also fully aware of the different stages of organization which had been reached in different counties, and he feared that this might lead to some difference of opinion on the question.

There were some counties in which bee-keeping was comparatively an unknown industry, whilst in others, like Bucks, the gospel of bee-keeping had been carried into almost every corner.

In some counties there existed an apathy as regarded the Associations, which made it very difficult to work them in their present form. No doubt there were many who cared about their bees, and sought to obtain the best known means of promoting their usefulness; but it was now a common remark for persons to make when invited to join a County Association: 'What advantage shall I get by belonging to it?' 'I know as much as the expert.' 'I don't want the *Journal!* When I wish to see it I can buy it for myself.' It was well known that a large number of persons, who were anxious to become members of Associations at the commencement, had now ceased to give their support, and in several counties the interest required to be worked up and be maintained, and that, under the present rules, could not be properly done.

Most of the audience probably had seen an article which appeared recently in a Berkshire Bee paper; it was a lengthy article on the subject of the organization of County Associations. As a matter of fact that article contained scarcely anything which he had not touched upon in the paper he read two years ago at the Colonial Exhibition, and even at that time he did not claim any originality for the system he had enlarged upon. He did not believe that the further organization of County Associations would meet the present requirements. After considerable experience in his own county (which he would not have alluded to except as an instance of what had occurred in other counties) he had come to the conclusion that it was almost impossible to find a secretary who had the energy, enthusiasm, and time, to work so large an area as a whole county, even the smallest. But in the case of Yorkshire, Gloucestershire, and other large counties, it was manifestly impossible that such large areas could be properly attended to by one secretary. In answer to that it might be said, 'If so, merely have your county secretary as a centre, and work the different localities by means of district secretaries.' In reply to that he would like to ask whether it was not rare to find a district secretary who was anything more than an official on paper. He had in Herts at one time enlisted the services of over thirty gentlemen who consented to act as district secretaries; but out of

the whole number there were not more than five or six who ever did any practical work. Some of them did not even take the trouble to answer letters, and it was useless to appeal to them at all. Again the times of meetings were inconvenient to some, and the places too far from others, so that it was almost impossible to get them together; in fact, it was not within the power of any one man unless he devoted an enormous amount of time to the work, to keep the whole county in touch with himself, and therefore to do the best that could be done for the Bee-keepers in the County at large. He believed that the interest in bee-keeping would be kept alive much more satisfactorily if the formation of Associations was not limited by county borders. There were many reasons why those limits should be done away with; and it was most desirable that societies other than those contained within county borders should be affiliated to the B.B.K.A., which at present was impossible. It was obvious that, owing to the irregular shape of most counties, and the imperfect railway service, communication from point to point was extremely difficult. For instance, he himself resided on one of the main lines in his county, but in order to reach some places in it, it was necessary for him to go up to London and down again; and it was easy to understand how in larger counties a secretary could not travel to and from some parts in a day. The same arguments applied to county committees, the members of which often living in remote districts could not sacrifice the time to attend meetings.

Thus the objection against County Committees was the difficulty of getting them together and to do work. It was easy enough to persuade gentlemen to put their names on a Committee list, but it was quite another matter to secure a practical result therefrom. Another defect in the present arrangement he wished to mention. They had always, apparently, thought it necessary to have Committees consisting entirely of good bee-keepers. Now that did not seem to him at all necessary. A couple of experts out of six members were quite sufficient, he considered. What was really wanted, was men who had sound ideas of business, and who could attend regularly, so that a continuity of policy might be preserved. He was of opinion that if the number of Associations was multiplied, and their area considerably restricted, many of the drawbacks of the existing systems would be overcome. In comparatively small areas a sufficient number of persons could be found who would sit on Committees, attending occasional meetings for an hour or two; but it was quite another thing for people after their day's work to make journeys by train, which would probably involve considerable expense and very late hours. Another point must be borne in mind. He thought all would recognise the fact that, as time progressed, there would, under the present *régime*, be a difficulty in keeping up the numbers of Associations, owing to the fact, that people becoming more or less skilled in bee-keeping, there would be less and less persons to be taught year after year. From that cause a great many would fall off, and not care to belong to an Association which had only one general meeting in the year, and nothing to offer them in the shape of an inducement. Smaller Associations might more easily organize their meetings, and the local bee-keepers over a small area be induced to attend; business could first be talked over, followed by an interesting conversation on the subject of bee-keeping. Why should not these smaller societies be established throughout the country? It was all very well to say that district Secretaries ought to do similar work; but experience showed they would not do it. So long as there was centralisation in a county everything was left, in the majority of the districts, to the Association Secretary, who must constantly keep the reins tight and the whip in hand, or life and interest flagged. It was quite impossible to wield an Association extending over a whole county. In the case of a smaller body the local people would feel all the responsibility on their own shoulders, and thus be induced to guard against failure; they would naturally feel their own personality to a larger extent, and that would cause them to throw more heart and interest into the undertaking.

One other point, and on this he hoped his remarks would not be construed offensively by any one. It had happened in some counties that persons living in certain localities have not been able to harmonise with the executive of the County Associations; it has been said that this or that Association was being carried on by a clique; that half-a-dozen men in a corner of the county had the affair in their own hands, and gave the cold shoulder to every one who did not fall in with their views. By the present rules such a County Association having been affiliated to the B.B.K.A. no one else in the county could start another Association. Of course the B.B.K.A. had no power in the matter. It could not pass under review the conduct of the Branch and shut up the clique. The consequence was that in such a case the welfare of bee-keeping in the whole county was liable to be sacrificed to the caprices of a clique, which was most unjust. Again, it might happen that there was some portion of a county isolated from the rest of that county, and quite unsuitable from every point of view to be bound up with that county. He had already alluded to the imperfect railway communication extending throughout different counties which often rendered intercommunication next to impracticable; and he would therefore say that it was highly desirable to draw up a system of Associations quite independent of geographical boundaries, and he recommended that a sub-committee should be appointed for the purpose of doing so.

He hoped he had said enough to induce the members present to throw out some suggestions. It seemed to him that the chief reasons why these new Associations should be formed were that the cause was not sufficiently gaining ground, and that signs were not wanting of the gradual decay of the branches as at present constituted. That was a most important point. He felt sure they would all recognise the necessity of the existence of the B.B.K.A. The fact was that unless the B.B.K.A. was supported more liberally by the outside world than it had been hitherto its usefulness would to a great extent be curtailed, and he believed that by extending the number of Associations, in the way indicated, old interest would be revived and new interest created, from which the whole body would undoubtably reap some benefit. As a matter of course, there would be an increase in the number of affiliated Associations. In that way new life would be given to the cause, and it might be the means of bringing new blood to the parent Committee. That would perhaps be an advantage. There was no necessity that the new Committeemen should all be practical bee-keepers. Practical apiculture was tolerably sure to be well represented. What they wanted was shrewd business men. He hoped all present would endeavour to persuade their friends to become subscribers to the B.B.K.A., so that it might be enabled to extend its influence more widely than at present was possible. He believed the time would come when the work of organization, especially in the matter of shows, would be carried on almost entirely by the B.B.K.A. in connexion with Agricultural and other societies. Local Associations would exist in the future rather as Natural History Societies, than as the promoters of public industry throughout the country. He very strongly believed that in a short time technical education in bee-keeping would become general in the schools of agricultural districts, but that this must be brought about by the efforts of the Central Association, whose annual income must first be augmented before any appreciable advance could be made in the cause they advocated.

The Chairman expressed his thanks to Mr. Seager for

the practical suggestions he had made, and begged the meeting carefully to consider them.

The discussion which ensued will be given in our next issue.

JOTTINGS BY AMATEUR EXPERT.

Mel sapit omnia.

Foreign Races of Bees.—Mr. John McNally evidently thinks I condemn all foreign bees. That is not so. There are good points about them all, and there are bad. The stinging powers of some of them are such that they become at times positively unbearable to the average bee-keeper. I imagine, if I tried, I could put up with the naughty ways of either Cyprians, Syrians, or Holylanders, but they are not worth it. They are too capricious and uncertain, and the difference between the amount of surplus they and the average British bee will store, will not compensate one for the extra pain and trouble it costs to work them. The greatest recommendation for the Carniolans has been their gentleness, and I feared their tempers would be ruined by cross breeding, as all the other Eastern races, as well as the Italians, have all been 'mongreled' by the queen-breeders until it has become practically impossible to get a pure-bred queen of either race. But I wish to remark I did not blame Mr. Benton for doing it; it was he who 'fitted on the cap.'

Carniolans again.—During the past two seasons I have had access to a 'tinker's half gross'—not dozen—stocks of the 'banded' Carniolans, and I will confess this freely about them, they were all very amiable in temper. I believe they are all a first cross with pure Italians, a cross which does not seem to affect their tempers nor their working qualities, and I must learn something more about them than I have yet been told before I am shaken in that opinion.

Late Queen Introduction.—The 13th and 15th of this month found me introducing young Carniolan queens. A batch of thirty imported queens arrived healthy and alive, and not a 'banded' queen or worker amongst the lot. I introduced seven of them to as many of my own stocks, removing the queens they contained to make place for them, my own strain being a mixture of all the races imported. I should not talk about queen introduction thus late in the season if it was not too late for others to copy my example, as many would fail, and probably wish I 'were kicked to death with butterflies.'

How it was done.—I will tell you how I managed it. I had the help of a sharp lad, which was a great boon. I used some stages that I made of deal some five years ago. They are very simple, and this is how they are made. They are 1 in. thick, and 4 in. square. In the centre of these I bored a 2-in. hole; one side of this hole I covered with wire cloth or perforated zinc. Into the recess thus formed I placed a foreign queen and about a dozen of her attendants, and a small piece of 'Good' candy, and covered all with a pipe-covered cage, which just fitted down into the recess. I let them remain in-doors in the warm, and fetched them one by one as required. We next proceeded to find a queen and removed her from her colony of bees, dropped a small lump of camphor into the hive, and closed all up again, leaving open the feed-hole in the top of the quilts. Over the open feed-hole I placed my stage containing the foreign queen, so that the bees in the hive were able to communicate with her through the wire cloth or perforated zinc. I then covered up the stage warmly, and left them thus until the next evening. By this time the whole colony were impregnated with the odour of camphor, and the fumes had ascended and perfumed the stage and foreign queen as well.

I liberated the queen thus. Remove the stage, blow a puff of smoke into the feed-hole to drive down the bees; remove the pipe-cover cage, being careful the queen is not in it, but on the bottom of the stage. I then carefully turn the stage upside down over the feed-hole, and the queen and attendant bees are at liberty to go down when they please. I cover up the stage again till next eve, when I find it empty and remove it, and cover all up snug. I reserved three of the best queens that I removed—they were all this year's—in case of failure, so that I had them to fall back upon; but they were not required, as all were accepted freely. Some of the hives had eggs and brood, but none of them attempted to build queen-cells. Don't try to do likewise; it is too late!

Giant Globe Thistle Seed.—So many have accepted my offer that this has been one of the liveliest of my bee-keeping experiences,—reading the letters, packing up the seeds, and starting them off. Most wish to know how to sow them. One went so far as to hint that I was remiss in my duty by not giving a full description as to culture; while another wanted a 'few seeds of a strain of bees that will gather honey when it rains.' Several asked 'if they are weeds;' a 'cousin Jacker' remarking he had an abundance of 'dissels' already. Others, again, sent a stamp but not an addressed envelope; while yet others sent their communication to Mr. Huckle, and not 'the Editor.' Now I will try to satisfy you all.

I have seen Carniolans at work on Canadian balsams on a chilly evening in September long after sundown. I have also seen Cyprians at work in a cold drizzling rain, when all other bees have been at home. The fault this season has been *there was no honey to gather*. My bees have worked hard enough, but got very little for it.

No! Mr. Cornishman, they are not weeds like 'dissels' (Cornish for Echinops); when the seeds are ripe the globular heads will fall to pieces and the seeds fall to the ground, and many of them will spring up next year, but they will not fly about so as to taint the surrounding country like the common thistle.

How to Grow them.—They are perfectly hardy; they will not bloom till the second year, consequently seeds sown next March or April will bloom in 1890. I dig and prepare a piece of ground the usual way as for seeds. I then take a small iron dibble and make holes in rows six inches apart; into these holes I drop a seed and rake all smooth, when I have done. When the young plants are large enough to handle I set them out where I intend them to bloom, at least half-a-yard apart. Do not let them get too large before setting out, as they soon root very deeply, and I choose a rainy day for the job, or water well and shade them, as they very soon wither and take some time to recover it.

If any more wish for seeds send on your envelopes; there is enough for all!

The 'Royal' at Windsor. Judges.—So our Committee have responded to the call made upon them, and introduced 'amendments,' and are going to spend more money into the bargain. 'Useful Hints' has caught the spirit of the thing, and hopes the show will be a 'decided advance' on all former attempts. We only require one thing, and that is, a vigorous and united effort, and the thing is bound to be a success, especially if it please a bountiful and wise Providence to send us a good flow of honey. 'Useful Hints' also sees we require more judges and a different method of judging. I have got in awful hot water for sticking to this contention, but the time has come at last when the need for change is admitted. But I cannot see it is so great a calamity as he does, 'when a less experienced judge at some provincial show (ah!) reverses the awards of more experienced and capable judges (Good! good!) made at more important shows.' Does it follow as a *sine qua non* that all shows must follow the lead of the Royal? If so, local shows need not appoint judges for hives and appliances. The winner at the Royal simply walks through all the provincial shows, and other exhibitors had better stay away.

Bacillus.—So we are physicked to death to kill the

bacilli, and treat the bees on the same method. Once more I wish to tell the readers of these 'Jottings' I never bought or owned a pennyworth of salicylic, phenol, thymol, creosote, or carbolic. Throw away the physic and poison, and be cleanly and bid foul brood defiancy!

'X.' wants a taste of Scotch heather honey, I guess, and that accounts for half the envy he has towards me over the Scotch truce. He is evidently unaware that honey gathered from horehound contains not only the odour but a very strong flavour of horehound, so strong, in fact, as to make horehound honey unfit for ordinary purposes of food; consequently, if there are any medicinal virtues in horehound, horehound honey is not hum—, but a good medicine. Gwr-yn-erwyn-y-byd.

One little piece of good news and I must close. The peculiar species of heather known as *Erica vagans* is only found (in England) near the Lizard, in Cornwall, where there are some hundreds of acres of it. A local paper says a swarm hived early in August stored 30 lbs. of surplus honey from it. That shows the possibilities of bee-keeping under favourable conditions.—AMATEUR EXPERT, Oct. 25.

BEE-KEEPERS' VOCABULARY;

OR, GLOSSARY OF TECHNICAL AND SCIENTIFIC WORDS USED IN WORKS UPON BEE-KEEPING.

Bee-glue. *n.* (fr. *L. gluten.*)—Propolis; a resin-like substance obtained from buds and limbs of trees and used to seal up every small crevice about the hive.

Bee-glass. *n.* (*Sax. glæs*, shining.)—A glass used formerly as a super, bell-shaped, also flat-topped, and of various shape and pattern.

Bee-guard. *n.* (*Fr. garder*, to keep.)—A perforated metal contrivance placed at the entrance of the hive, which allows workers to pass while preventing the queen and drones.

Bee-gum. *n.* (*Sax. goma.*)—A term used in some parts of the United States for bee-hive, because formerly the hollow trunks of the black gum-trees were employed for this purpose. In a general sense applied to a hive made from a hollow log or tree; that part of a hollow tree which is, or has been, occupied by wild bees.

Bee-hawk. *n.* (*Sax. hafoc.*)—A bird called honey-buzzard (*Pernis aviporus*) which preys on hymenopterous insects; also a clear wing moth (*Sesia fuciformis*) resembling a wild bee. In America the dragon-fly is also called bee-hawk.

Bee-herd. *n. obs.* (*Sax. hyrd*, holder or keeper.)—Old name for one who took care of bees. (See *Bee-keeper.*)

Bee-hive. *n.* (*A.-Sax. hufe*, a house.)—Term applied to the habitation of bees, made of wood, straw, or other materials. In some countries even earthenware cylinders are still in use.

Bee-hood. *n.* (*M. E. hod.*)—See *Bee-cap.*

Bee-house. *n.* (*A.-Sax. hus.*)—A house for sheltering several colonies of bees, the hives being placed on shelves; also used by German writers to signify a hive.

Bee-hunter. *n.* (*Sax. huntian*, to hunt.)—A person who pursues wild bees with the object of finding their nests and taking the honey and wax.

Bee-keeper. *n.* (*Sax. cepan*, to keep.)—See *Apiarist, Apiculturist.*

Bee-keeping. *vbl. sb.*—See *Apiculture.*

Bee-killers. *n. pl.*—Flies belonging to the family Asilidæ, of which there are several in the Western and South Western States of America that prey upon bees.

Foreign.

ITALY.

At the Exhibition recently held at the Vatican, on the occasion of the Jubilee of Leo XIII., Cav. L. Sartori, of Milan, was awarded the large silver medal and diploma for his exhibits of honey, wax, and plates illustrating apiculture.

SWITZERLAND.

The *Revue Internationale d'Apiculture* states that, in consequence of the want of honey in most parts of the country, the committee of the 'Société Romande d'Apiculture' has decided unanimously to put off until next year the inauguration of the honey market which they had intended opening late this season.

GERMANY.

A race between bees and pigeons took place at Hamme, Westphalia, a short time ago. The distance 'run' was a good mile. One afternoon, at 4 o'clock, twelve bees and twelve pigeons were set free at Rhynern, the competing bees having been rolled in flour before starting. The bees won the race, the first of them, white all over with flour, having arrived at the hive entrance a quarter of a minute sooner than the first pigeon, whose nest was situated close to the bee-stand. The rest of the competitors arrived within another second a little while afterwards.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts* (see 2nd page of Advertisements.)

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

CARNIOLANS.

MR. AMATEUR EXPERT AND 'YOUR HUMBLE SERVANT; THE LATTER, AT LEAST, NOT AT ALL 'CUT UP.'

[1854.] Mr. 'Amateur Expert' says of himself: 'I fear I know more (about Carniolans) than Mr. Benton would care for me to tell.' Not at all, Mr. 'Amateur Expert.' I am anxious to learn all I can about them. Out with it! Tell us all you know about them, if you can find time for so much, and an indulgent editor will grant you so much space.

No, I do not claim that I have told *all* the truth yet about certain queen-raisers or queen-dealers, but only that what I have said is true. About some that Mr. 'Amateur Expert' quotes and apparently upholds I could, if I deemed it meet, tell some very homely truths which would make some ears tingle, and Mr. 'A. E.' conclude never to take up his pen in their defence. He evidently does not know some of these as well as he ought; does not know how well, in more ways than one, they might be compared to that very crooked thing called a *boomerang*, a weapon which, I have heard, will, when directed by the hand of one not fully acquainted with it, fly back and crack the skull of the sender instead of that of his opponent.

But, dear Sir, do you mean to insinuate—to hint, *even remotely*, that my name is to be included in that black list (if list it be—something I must doubt) of those who send out *virgin* queens as *fertile?* Do you mean even to

says that I send *virgin* queens at all? If so, then out with it in plain English—in black and white, with not a shadow of equivocation. It was, indeed, a right clever thing you did when you sandwiched that rich paragraph about virgin queens in between Benton and his Carniolans, and then hinted only that I was not meant as one of the condemned! I fancy you wrote this 'that he who runs might read,' well knowing, too, how such are likely to read. Please tell us in the next number of the *Journal* just what and how much you mean. I have sent queens to nearly every county—if not every one—in England, and also to many parts of Scotland and Ireland, and I believe their merits are such as will recommend them. *Most* of the Carniolans sent out by me are accompanied by workers, which are their own progeny, and none are sent away until I have seen their brood. But in the case of Italians sent from here I cannot always tell whether the workers sent with them are their own progeny or not. They come to me in small nucleus-boxes, and, in so far as it is possible, I use, in mailing these queens, workers from the nucleus, which came from Italy with that queen. I have received altogether large numbers of queens from Italy, and from Carniola, before I located here; and, though I have repeatedly received *poor* queens—old ones, crippled ones, and runty specimens—still I do not think it was ever my lot to receive an unfertile queen, and I have carefully tested many of these purchased queens. It was but a few days ago that from twenty-four queens that arrived from Italy two were picked out that I would, under no circumstances, accept, and were returned, carriage-paid, to the sender. The remaining twenty-two were separated into two lots, marked first-grade and second-grade, the latter including some six or seven out of the twenty-two. Yet all of these queens were sent me as first-grade. It could only be in my own interest for 'Amateur Expert' to name parties who sell virgin queens as fertile.

But now, Mr. 'Amateur Expert,' I must denounce you most severely as guilty either of malice aforethought or of gross blundering; let me believe the latter, the more easily pardonable. You say, "Mr. Benton says *all* Carniolans are 'banded,'" (The italics are mine.) I positively deny ever having said this, and I hereby challenge you to show where you derive authority to say I ever said it, or wrote it, or printed it. I did say in the leaflet, *Bees*, No. 5, Jan. 20th, 1886: 'In all parts of Carniola some queens are found which produce bees having the first segment of the abdomen somewhat rusty red in colour, and they are as often seen among the finest, most prolific queens, as among those of any other grade.' And again in a private letter to S. W. Morrison, M.D., of Pennsylvania, a prominent American breeder of Carniolans, from whom I have annually, for four or five years past, received orders for breeding queens, I wrote last July as follows: 'Two intelligent bee-keepers from the northern part of Carniola, who were at my residence to-day, stated in answer to my inquiries that an occasional tendency toward orange or rusty-red bands was always the case with all Carniolans.' An extract from this letter appeared in the *American Bee Journal*, August 8th, 1888, and was copied, I believe, by the *British Bee Journal*. Likely it is on this that 'A. E.' bases his statement. But surely to say, 'an *occasional* tendency toward orange or rusty-red bands' is by no means to affirm that '*all* Carniolans are banded,' as 'A. E.' would have it appear. Again in this same letter I said: 'There is in the race (Carniolan) a tinge of yellow blood that crops out every now and then, do the best one may.' What better proof do I need to bring forward to show the absurdity of one's attributing to me the statement that '*all* Carniolans are banded with yellow or orange?' But let me cite still another sentence from my letter to Dr. Morrison. It is as follows: 'I breed only from such queens as produce *grey workers*, such as show no yellow or orange bands, not even a tinge of orange, and I permit no drones to be reared in my apiary except those from Carniolan queens, whose workers and drones are quite grey.'

Then Mr. 'A. E.' goes on to 'wonder why, if it is so (that all Carniolans are banded), that other dealers can supply queens that will not breed banded bees, and are as gentle as their other characteristics are true to the old style of queen.' Plain enough it is why they furnish such; because they, as well as I, would find it troublesome, even were it desirable, to supply only 'banded' (yellow or orange) Carniolans, since *greyness* and *gentleness* are the most striking characteristics of the bees of Carniola. And even though in every native apiary in Carniola, of any size, a *few* stocks may exist, *some* of whose workers are 'banded' more or less, that is no reason why every dealer here *cannot* supply queens that produce grey bees that are at the same time gentle; and, though probably many that produce workers showing some yellow are sent out when no preference is stated, I do not doubt but that each and every one now in the business here in Carniola does, for the greater part, send grey bees, and, *in the main*, he could not but send *gentle* Carniolans, whether they showed a trace of yellow or not. It must be that I too have, for the greater part, some of Mr. 'A. Expert's' 'old style of queens,' for I wear no bee-veil at all when manipulating Carniolans, and my nice silk-net veils stored away in a box are getting all mildewed for want of an occasional airing. It is a pity, too, for I am likely to need them in Italy soon!

Recently I have been breaking up some second and third swarms that, for want of empty frame-hives at the time they issued, had been thrown into native box-hives. The latter are long shallow boxes, about 36 inches long, 14 by 8 inches. Turning one of these bottom upwards at any time—even during unfavourable weather or towards nightfall—with a hatchet I pry off the bottom board, which is nailed firmly with nails about 2½ to 3 inches long, often wire-nails that hang well, and immediately proceed to cut out combs. Sometimes a few bees dash out at my face, but I dodge their first onset, and seeing their mistake they apologise by going back and standing up on all sides and buzzing lustily, an 'old style' song. Say, Mr. 'A. E.,' are not these the 'old style' sort? Mind you, this is all without a veil. I haven't much use for such a nuisance around Carniolans, and as to smoker, it is half the time too much bother to pay to light up my Bingham, which came all the way from my native pines.

'A. E.' must needs help out his lame argument by dragging in 'Cyprians.' It is not worth while to fight with him on this score, for if I convinced him it would 'be against his will, and he'd be of the same opinion still!' But 'stick to your text,' Mr. 'A. E.;' and to the Editor I would suggest that, when I bring in anything as irrelevant to the subject under discussion as is the paragraph about 'Cyprians' in Mr. 'A. E.'s' letter, the pencil or scissors should be used on my manuscript—and perhaps he will show his impartiality by treating Mr. 'A. E.'s' in the same manner.

Well, now, Mr. 'A. E.,' are you simple enough to suppose *anything whatever* that Henry Alley can write would 'cut me up rather rough,' as you put it? And as to the Carniolans (bees), they are *sure* to take it good-naturedly. Do you remember, or did you know, how, when I wrote about *Apis dorsata*, some ten or twelve years ago, Bro. Clarke of classic (!) I meant, *Canadian*, bee-poetry fame, quoting nearly the words of Father Langstroth, said, 'Wanted, some bee-keeper, not too old, nor too young, &c., and,' he added, '*very thick-skinned*, to emigrate to Java, &c.'? And if you are aware of these things you will also no doubt know that I was not afraid to let them pinch and probe my hide then? and do you suppose that, after all the punches and pricks I have

gotten since then, and after having run the gauntlet with Hymettus bees, Tunisians, and the Eastern races, on one hand, and the giant *Apis dorsata* on the other—do you suppose after all this that my hide is any tenderer—that any ordinary fellow is going to make any impression on it, say nothing of 'cutting me all up rough'? At the time I was unsophisticated enough to suppose Mr. Clarke was poking fun at that valuable bee, *Apis dorsata*, but now I am sure he wanted some one thick-skinned enough to be able to survive the javelins, not of the Javans nor their wild bees, but of envious, ignorant, selfish, and unprincipled bee-keepers and dealers who, Mr. Clarke knew, would soon overwhelm a thin-skinned chap.

Mr. Stachelhausen says, 'The first Carniolan queen imported into Germany had no sign of yellow blood.' Very likely, Mr. S. And there are plenty more of the same sort here in Carniola. But your one queen could never, no more than could the traditional 'one swallow make a summer.' And hundreds of bee-keepers here who have nearly reached the allotted time of man, can testify that yellow-banded bees existed in their native Carniola when they were but striplings. But in your imagination all this is because, as you put it, 'some strange races *may* have been imported into Carniola, and so the Carniolans are more or less mixed.' Strange reasoning, that is, if it be reasoning at all. Stick to your chemistry, friend S., or your bee-botany, or microscopy, and get Professor Cook to coach you up in it, but don't meddle with what you evidently know little about.

Mr. Alley's statements—some of them, at least—are, I fully believe, so plainly absurd to anybody who reads them, that I do not need to waste many words as comments. He says, 'All the good points possessed by those bees sold as pure Carniolans by dealers are derived from the Italian blood, by which it is evident that they are crossed.' *Exactly the reverse of this is true.* Every breeder of Carniolans realises that, in so far as his Carniolans approach Italians in their characteristics—I mean in those features in which they most widely differ from Italians, and which, therefore, must be those that give them the superiority claimed for them over Italians—just so far they are inferior to the type of Carniolans he wishes to have. If Mr. Alley's statement were true, why should so many who have tried Carniolans by the side of Italians be rejecting the latter in favour of the former? I could cite many instances, but a couple will do.

In *Gleanings* for Sept. 15, page 682, Mr. E. E. Ewing, Rising Sun, Md., after a paragraph in strong commendation of Carniolans, says, 'My bees are Italians, but they will not be after this season.' Mr. Root says to him, 'I suppose you know you are giving the Carniolans a pretty big recommendation.' And elsewhere in the same number (page 696), Mr. Root, the strenuous opposer of Carniolans, says, 'We have no Carniolans, but expect to test them again.' No doubt he sees the tide has turned, and proposes to ride with it easily, instead of trying, like Mr. Alley, to drive it back by throwing himself square against it.

Mr. S. L. Watkins, Placerville, Cal., says, in the *American Bee Journal* (copied by *B. B. J.*, p. 495, Oct. 11th), that he has Carniolans, Italians, blacks, and hybrids, and 'that Carniolans have done the best,' &c.; adding, 'Next season I shall keep nothing but Carniolan bees in the Placerville apiary.' I have selected these because the parties are not, so far as I know, breeders or dealers in queens, except Mr. Root, who handles only Italians.

Mr. Alley does not believe, so he says, 'that there are more than two bee-keepers in America who ever saw *pure* Carniolan bees, nor that there is a pure queen of that race in the United States.' Hence it would appear that he does not believe *pure* Carniolan bees exist anywhere in the world! for certainly as pure Carniolans as exist or ever have existed in Carniola itself, have been sent, not alone by me, but by others also, as I have reason to believe, to the United States, and are now in colonies of bees there in nearly every state in the Union. It was this same Alley who brought forward a race of bees which he claimed to have imported from Hungary, and which he called Hungarian bees, but which he discontinued rearing when he found he could not get others to accept them readily, and then when he found that Carniolans were fast gaining friends in the western world largely through my efforts to make their merits known, wrote, a year or two ago to *Gleanings:* 'You will find Carniolans described in my "Handy-Book" under the name of Hungarians. They are worthless,' etc. Fine authority one who writes such stuff! It is of this man that an Ohio correspondent had purchased queens, and then wrote me: 'I'd rather pay you $15 for *one* queen than give Alley 15 cents for a whole bushel of his.' And to a customer on the Pacific coast—one of the most courteous and honourable men I ever had to deal with—to whom Mr. Alley had sent unsatisfactory queens, he wrote, when asked to make the matter right, and sent an equally valueless queen, saying: 'You may call her Carniolan, Italian, or Holy Land; whatever you d——n please.' It was of this same man that I purchased just fifteen and a half years ago, a number of his so-called 'fine Italian queens,' and received the poorest lot of queens, without excepting any, that I ever knew anybody to send out; most of them *absolutely* worthless and all dark, small, inferior, runty queens. When I wrote him that three or four were wholly valueless, he sent me a couple little, if any better, than the first.

You see his old sins, like ghosts, rise up to accuse him, and there are many more for which he has yet to answer. I venture that Mr. Alley's words will not receive one-tenth the attention in my native land where we are both known, that they will get in Great Britain, where his full history is not so well known. I might tell you some twenty-two years of it, but then in the end I fear, even if it did make a 'handy book for bee-keepers,' it would not be very 'scientific.' It would be too much like taking a-back Alley!—FRANK BENTON, M.S. *Michigan State Agricultural College, Laibach, Carniola, Austria, October 19th.*

CARNIOLANS AND OTHER RACES.

[1855.] I have known the Carniolan bees since about 1868 and saw them in the apiaries of my friends, and have had a few colonies myself. The first Carniolan queen imported into Germany had no sign of yellow blood, and they were very similar to the brown German bee, only the hairs of the young bees were more grey or white. Since that time Carniola has exported a great many colonies, swarms and queens, and some strange races may be imported there, and so the Carniolans are more or less mixed. The proper Carniolan bee is certainly nothing else but a variation of the so-called German bee. The difference in the exterior markings is not more plain than with other variations of the same race, and so it is with the other characteristics. In the north of Germany, in Hanover, we have another variety of the German bee, quite alike in habit to the Carniolans, but more black. They breed well and early in spring, breed drones all the time, and swarm as often as anybody can wish, exactly like the Carniolans. In the middle and south of Germany you can find a strain of bees more brown than black, slow in breeding and swarming. A colony with a young queen will not build any drone-comb or swarm out the first year, and some colonies, and strong ones, too, did not swarm for many years. But now this variety of the German bee is mixed with all the different imported races, and you can hardly find a pure colony. Why is this difference? The answer is, that the Carniolans and the northern German bees are varieties of culture, and to a certain degree fixed by a certain management for more than one hundred years. In both countries the

main honey flow is late in the fall. In the spring the bee-keeper does all he can to get early and many swarms. To get as many colonies as possible for the crops, in both countries very small hives are used. In the fall all the surplus colonies are brimstoned, the heaviest and the lightest colonies are killed, and in the selection of the stock for the coming year the bee-keeper is very careful. He selects colonies with young queens only, mostly after-swarms; a colony which cast no swarm at all is surely brimstoned. It is easy to see that in this way queens with a swarming impulse only are selected, and so by the run of the years this impulse got more and more fixed. The Carniolan and the German bees rear too many drones and build too much drone-comb, but this characteristic is necessarily in connexion with the swarming impulse, and every race possessing this swarming impulse will do the same.

In both the so-called races you see a strain of bees bred and fixed by the hand of men by selection and not by crossing. This fact will show us the way by which we can get a race of culture. It can be done by selection of queens to breed from with the desired characteristics; but this selection has to be done, and carefully, too, for many generations before a certain characteristic may be more or less fixed.

I do not believe we can get a fixed race by crossing two different races, because in a couple of generations the markings of the one race will more or less disappear. I believe that the Italian bee is a cross between the Egyptian and the black bee, but it is no fixed race yet. In the time of Virgil it is known that in Italy there were black and yellow bees, and so it is to-day. The first bees exported from Italy looked quite mixed up, some nice yellow bees, some of them we would call hybrids now. Dr. Dzierzon imported the first Italian colony to Germany about 1854, and bred from this one queen all his queens for many years. For breeding he selected the most yellow queens or better queens with the most yellow daughters, and in a few years his Italian bees looked nicer than any of those imported directly from Italy. Soon a big trade sprang up in Italy for queens, and the breeders were more careful to select for colour. More than this, they imported some Cyprian queens to mix with and better the colour. This selection and breeding in one direction can be done as easily here in Germany, and so every dollar spent for an imported queen from Italy is, in my judgment, lost.

The Italian bee is as nice a bee as any, and if we breed not for colour only, but look for other good qualities, too, we can surely breed a strain of bees adapted to our purposes.

What is a bee good for like the Carniolan that sends out swarms and after-swarms in an unlimited number at least containing a dozen and more young queens and about two dozen worker bees? (I have seen such after-swarms not quite as large as a child's fist.) Mixing this race with a good strain of bees on the one side, and every year inventing another management to prevent swarming, is merely nonsense. These bees are very good for their location and for certain purposes, but not for American apiaries.

Further, I know, and proved it too, that the Italians are better honey-carriers than the black bees—at least, better than our black bees. I had them side by side during a couple of years, and the hybrids are as good for working quality as the pure Italian, but not better. But to get hybrids I want some pure Italians to breed from, and will get hybrids more than I want by themselves. If I breed from the hybrids without later selections I have black bees, with the same bad working quality again very soon. I know what I talk about, I have tried it.

It is proved that the Italian bee can be bred by careful selection to a more yellow colour; in the other direction the same bee can be bred to a dark-coloured one. I think this is proof enough that the Italian is no fixed race, but a cross of two races that may be more than one thousand years old. If we breed a race or strain of bees by crossing or selection, we can keep this race by constant and careful selection only; and the same bees coming to other circumstances will lose their characteristics in a few generations.

So it seems very improbable to breed a fixed race for any purpose. The best way will be all the time to select from the best stocks, and we can improve our bees as long as we select, and shall go backward if we stop selecting.—L. Stachelhausen, *Selma, Texas* (*The American Apiculturist*).

REPORT No. 2.

[1856.] My first (*B. B. J.*, Jan. 12th, 1888) was a chapter of accidents and blunders, of which I had my share, and was satisfied as to the cause. We are over-anxious, perhaps, as beginners, especially if we are alone, *i.e.*, without the advantage of another's advice and experience now and again. To use a trite saying, we have bees on the brain—night as well as day. Having removed all I could during last winter of the *cause* of my first wrong-doings, I was sanguine of success during the season just gone; then, when all were ready, the weather was wrong, and consequently, *hope* was *less*.

According to all accounts, many will feel sorely patience-tried, and the purses of the poorest of us have been emptied that the hives might be filled. Still something within urges us to *go on*: for, although this year the labourers have been many and the harvest small, next year, we hope, will more than satisfy the most sanguine. I am not far wrong in reckoning this my first season with bar-frame hives, although I had one hive last summer; but as a result of my ignorance it yielded me nothing, and had to be strengthened by uniting and feeding to pass the winter.

I began the spring of this year with an old straw skep and three frame-hives. From No. 1 (Cowan) I have extracted 40 lbs. and taken 18 completed sections; from No. 2, 28 lbs. and 24 sections: and from No. 3, extracted 34 lbs. The skep swarmed June 24th (Sunday), and have stored enough to winter upon; and the Sunday but one following a cast issued, which, with those driven from the skep, have stored enough for wintering.

In *B. B. J.* for August 16th, the 'Selected Query' was, 'Can honey be obtained from a swarm the same season?' &c. The Rev. George Raynor replied, 'Not in seasons like the present.' But from a swarm which I purchased from a neighbour about mid-June and hived, I have taken 26 completed sections, and several partly sealed over only. As near as I can guess, I left about 20 lbs. in the hive. Considering the few and brief honey-flows we have had, I think, Mr. Editor, you will, say with me, to this swarm—'Bravo!'

As I had never taken a section till this summer, I was anxious to begin well, as I could not afford to stock myself with crates, &c., and then throw them aside for something new and improved; so, contrary to the advice of the more experienced, I went in for the very latest invention, viz., Lee's hanging-frame section crate. We regard this invention of Mr. Lee's as a real and genuine advance, the result of much patient thought and labour. When completed these sections are very beautiful.

My best-built combs, too, are those in Lee's frames, being perfectly regular. I venture to predict for Lee's frames and sections a great success.

Having a wish to try shallow frames, I knocked together a crate and ten frames, and placed them under a crate of sections on hive No. 2. July 10th I had a peep, and found sealed comb in all of them, but as the queen was using eight of them, I removed two only,

which weighed 3 lbs. each; replaced these with two more with starters in, and on August 29th removed all ten, splendidly filled and finished, and extracted 23 lbs. of sainfoin honey. My honey has been mainly gathered from sainfoin, white clover is not grown hereabouts.

September 15th I had a new experience—it was a case of desperate robbing. I had cautioned my neighbour some days previous about sprinkling sugar in front of the skeps, and now the fatal consequences were seen. Under the circumstances driving seemed to me the best thing to do, and we commenced at once. There were six skeps, and the robbers were just in earnest on the second. One had been emptied of every drop of honey, and when I lifted the next the sight was shocking. Lumps of well-filled comb lay on the board, and thousands of bees, black as beetles, lay weltering in honey. Inside the skep was just as bad, scarcely a bee could fly. By cutting the skep in twain, several pounds of comb were secured. What was most strange was that those which I drove from a skep on the shelf above, and placed there again till evening, were all gone when I went for them. I found that the board underneath, which was still wet with honey, had attracted the bees from above, and in the evening, being too full of honey to fly, I suppose, they united with another driven but a few inches distant. The two skeps left have not been molested since.

I am glad to tell you, as others have done, that wasps have been comparatively few this summer. I must have killed about thirty queens amongst the raspberry canes. I don't know whether others have noticed it, but the robber wasps (I will not call them workers) seem to me to be smaller this year.

I have increased my stocks by uniting in three hives eleven lots of driven bees. So now I have nine hives, lavender, salmon, blue, green, stone, brown, slate, and plain, the last named being in my new hut.

Most cottagers about here prefer the old way of taking up their bees, as, if driven, they contend that they return and rob those left for winter. For all the robbing this autumn, my bees have to bare the blame; for, as several have told me, if you take the honey from the bees, they will proceed to rob wherever possible! The fact that my bees are a mile from the village goes for nothing, as the cottager says bees go for miles and miles. 'Why, I kept bees afore yow wos born,' said one; 'and I tell ye tha ont ate surrup; tha rob the tothers. Yow ma think yow know a lot about bees, but other fonks know as much as yow, an' yow arn't agoin' to make me b'leve that yar way is the best.'

We must not forget that but very recently we shared the darkness with our neighbours, and one by one they will emerge into the light of modern bee-keeping, and share its pleasures and profits. More than this we cannot expect, as the expense alone of commencing with frame-hives is too much for the cottager who has to support himself and family upon 10*s.* a-week. And most bee-keepers hereabouts *are* of the farm-labourer class. If I could afford it, my plan would be to present a hive to each cottager in the spring, and assist him till he could manage alone. This, I think, would be the quickest way, and the best, too, of bringing about a change.—F. Goodrich, *Methwold, Norfolk.*

THE B.B.K.A. AND AFFILIATED ASSOCIATIONS.

[1857.] The time has now arrived for a thorough ventilation of the subject of the relations existing, or in future to exist, between the County Associations and their mother Association. Without doubt there is a strong feeling pervading the County Associations that their affiliation with the B.B.K.A. is not of a character to warrant a continuance of same under the existing régime. I am sure all would deplore that the relations should be in the least strained. There seems to be a want of confidence, which any one regularly attending the meetings of the county representatives will readily observe. This feeling must be removed at once, and a thorough fraternal co-efficient one take its place. I take it that the B.B.K.A. exists for the County Associations, and these, likewise, for the British; if one fails the other does likewise—if the counties flourish, the mother must, and will, do the same. Our aims are identical. We must, to accomplish the ends for which our Associations were formed, be perfectly synergetic: when this takes place, all stumbling-blocks and difficulties of every kind must certainly be surmounted, and the aims of every Association be successful and appreciatingly received. All the Associations being, or ought to be, as taught by the mother Association, co-operative and united under one standard; it seems to me, and I know to most others, a direct contradiction to the teachings of the mother Association, that the affiliated Associations should not have an atom of voice in the matter as to the working of their own family. We, speaking on the part of most of the affiliated Associations, have now grown to manhood, and so, as a matter of course, as in all families, desire to have some control as to the manner in which the family is governed. We do not desire 'Home Rule,' but we surely can expect to have some voice, practical voice, in the management of our own affairs, these being identical with the B.B.K.A. The B.B.K.A. issues regulations, for instance, the Show rules, but the affiliated Associations have no voice in the framing of same, they are only allowed to suggest—whether the suggestions will be carried out rests entirely with the ideas of the B.B.K.A. Committee. In no more striking manner was the fact of the office of a county representative being quite a sinecure more fully illustrated than at the last meeting of county representatives; when, upon a proposal being made by a county representative that the B.B.K.A. should ask the Royal Agricultural Society to allow of certain prizes to be given, the proposal, without any comment, was at once taken from the county representative's hands, and proposed and seconded by two members of the B.B.K.A.'s Committee. I had an idea at the time that it looked rather impolite; perhaps I was wrong.

An idea is prevalent that as the affiliated Associations pay only the modest sum of one guinea to the parent Association as an affiliation fee, they cannot expect more than they get for the money. I think we fairly get our money's worth, but that sum was the proposal of the B.B.K.A., and I don't think if the funds of the B.B.K.A. urgently wanted increasing, that any of the affiliated Associations would say nay. The money part of the question is not the correct way to look at the matter; we must ignore that, and study the moral aspect. After when the B.B.K.A. has a truly representative Committee, each affiliated Association being represented on the same, can the money question be more equably and no doubt satisfactorily solved.

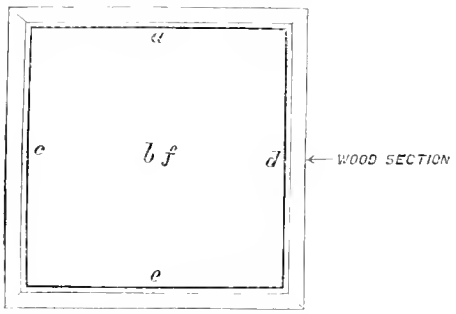
A county representative ought, and eventually will be, an *ex-officio* member of the Committee of the B.B.K.A. Now is the time for such a motion to be carried. Between now and the annual meeting of the B.B.K.A. there will be plenty of time to ventilate the subject for and against in these columns, so that the question, which I must allow is of the very utmost importance both to the B.B.K.A. and each affiliated Association, may receive its proper share of consideration, to be gained only by mental co-operation.—W. B. Webster.

NOTES ON BEE HIVES.

Glass Sections.

[1858.] Perhaps another way to make up glass sections may be interesting:—Take a block $3\frac{3}{4}'' \times 3\frac{3}{4}'' \times \frac{3}{8}''$, place this within a $4\frac{1}{4}'' \times 4\frac{1}{4}'' \times 2''$ wood section, cut a piece of glass $4'' \times 1\frac{1}{2}''$, and place it in at (*a*), and another similar

piece in at (*b*), cut a slip of glass 4″ less twice thickness of glass used × ⅞″, and place it at (*c*), another similarly at (*d*). Cut a whole sheet of foundation, 4″×4″, less twice thickness of glass used, and place it upon the block which is within the wood section at *b f*. Cut another wood block same size as *b f*, and place this wood block



upon the foundation; place a slip of glass at *c* and *d* to complete this glass section. These latter slips must be pressed down 'home.' The blocks may now be withdrawn, and sections put on hives or into supers. The bees will soon fix top and bottom and the sides of the foundation quite securely.

The dimensions of the blocks and glass slips are quite correct, but will serve to indicate how they should be made. The tops and bottoms of the glass slips may also be cut or divided so that the foundation is held firmly all round in a vice-like grip.—T. Bonner Chambers, *Tref Eglwys, Caersws, Montgomeryshire, October 15th.*

P.S.—One, two, three, or four of the glass sides may be divided to suit the tastes and convenience of those using them. If the slips are prepared within the wood section, as illustrated in the *B.B.J.* on page 490, the top and bottom rails divided, full sheets may quickly be inserted by using the above blocks. I will also state that I have forwarded full working drawings of one or two other methods for making blocks for glass sections, and they will appear in the manufacturers' catalogues in the spring. I might also state any one wishing for an invisible glass cement will find gelatine dissolved in gin and applied warm will answer efficiently.

NOTES BY AN AMATEUR CARPENTER AND BEE-KEEPER.

[1859.] Although I should hesitate, with my present limited experience in bee-keeping, before advising any one who has to purchase his hives to commence forming an apiary, I recommend all who have plenty of space and a carpenter's shop to begin making hives on the first rainy day, and filling them with bees as soon as they conveniently can. Two years ago I bought a hive for 32*s.*, and hired the services of a neighbour to manipulate what I then thought from tradition to be very dangerous insects; but in a short time I saw that, with the aid of my carpenter's shop, a veil, and smoke, 'Fumosque manu praetende sequaces,' I could get much pleasant employment at a very small cost. In the whole range of amateur carpentering I know nothing so satisfactory to make as a bee-hive. Amateur defects, imperfect sawing, planing, &c., can be satisfactorily remedied by their 'friends' putty and paint.

Having learnt from my model the theory of modern hives, I, during the wet days of winter, turned a dozen Stores 'non-returnable cases' into an apiary, which my neighbours view with astonishment and delight. But the hives have one considerable fault—they are all shapes and sizes, from the gigantic 'Bees' Castle' to the 'Little Wonder,'—names bestowed upon them by my gardener, who works under me. Buying a case of Tate's cube sugar, however, I determined to make these boxes my future hives, as they are all the same size and of a very convenient shape. I put extra interior walls to the ends, and ⅞-inch boards on the sides, which make a warm residence for the bees in winter, and form a support for regulation-sized bars and section-boxes. My grocer supplies me with these empty boxes at 6*d.* each, and without counting my labour, or rather pleasure, in making them, I calculate each hive, when ready and painted, costs me about 1*s.* 6*d.* I should like to take an order for 10,000 at 8*s.* each. The four legs are very easily cut out of ordinary rafters and screwed on. I put an extra bottom on the box, allowing the end piece of wood to project, in order, when bevelled down, it may form an alighting-board. All crevices are filled up with putty, and exterior strips of wood nailed over them for further security. I much prefer hives of my own make to those purchased, as they are deeper and admit of better manipulation. The latter have the bars level with the top of the sides, and unless great care is used the carpet coverings are liable to get on the top, where the roof has to sit.

In my hives I can keep the lower storey warm by using very little besides paper for a covering, as the sides are high. I made windows in two of the hives, but I don't see much use in them, as very little is to be seen through the glass, and it is much more satisfactory to look in when the roof is off than in at the sides.

In order, however, that others may have a good view of my bees, I made a couple of hives to fit into my workshop window, and formed all the sides of glass, with moveable wooden frames, so that any one can view what is going on inside with perfect security. I show them to all sorts of people, and am often amused by the remarks which are made. The second of these hives was only filled with bees last month; I bought two stocks of condemned bees at 9*d.* each, and put them both into one hive; and now they are apparently in a very thriving condition, having filled the whole place with wax and Jamaica sugar syrup. A friend of mine who has estates in Jamaica sent me a barrel of sugar, and the bees have had it all. This year I have taken no honey, but I hope my stocks will pass the winter on the large amount of syrup I have given them.

I regret to say, however, there has been a good deal of robbing going on. A neighbour, who has twenty or thirty stocks, does not feed them, and I believe they are the robbers. A law might be passed compelling people to feed their stocks, so that they may not rob their neighbours.

The mortality among my bees during the year was certainly very great. Incautiously I allowed a pair of swallows to build a nest close by, regardless of Virgil's sound advice:—

'Absint et picti squalentia terga lacerti
Pinguibus a stabulis, meropesque alieque volucres;
Et manibus Procne pectus signata cruentis.
Omnia nam late vastant, ipsasque volantis
Ore ferunt dulcem nidis immitibus escam.'

And they fed their young ones almost entirely on bees. Unfortunately I did not discover the fact until it was too late.

One advantage I have derived from keeping bees is that I have had my attention drawn to the beauty of the fourth Georgic, and I have lately read it so often that I nearly know it off by heart. The lines I admire most are those beginning, 'Ac veluti lentis,' where the bees are compared to the Cyclops. These lines, to be fully appreciated, should be learnt off by heart, and repeated whilst watching a pair of blacksmiths hammering hot iron.

But I am wandering from my subject, and will conclude with the remark that it appears, in this neighbourhood at least, bees will be very scarce next year.—L.

STORING APPLIANCES AWAY.

[1860.] Now that the time has come round once more when we should be storing away sections, racks, spare combs, doubling boxes, extractors, &c., &c., I thought I would give my way of doing the same; and if I differ from our esteemed friend, 'Mr. Useful Hints,' a trifle in some things, I hope he will forgive me and correct me where I am wrong, as I have gained most of my knowledge from various writings in the *B.B.J.*, and those from 'U. Hints' have mostly been particularly looked after by me. I have often thought how glad I should have been to have had the pleasure of seeing the *B.B.J.* years before I did, but it had been in circulation years before I thought there was likely to be such a publication. I have always been very fond of bees, and for a long time I had wished I could decide upon some better way of keeping them than the old straw skeps afforded. And about the month of February, 1883, a friend of mine came from America and brought a model of a frame-hive with him. He said it was quarter-size; so I made one from it, but when I had finished it it was very awkward-looking, and still worse handling, as the top bars of frames were about 22 in. long and $10\frac{3}{4}$ in. deep. I had never heard of comb foundation, so I put melted wax along the under side of top bar to guide the bees in building their combs. The top of the bar was flat on the upper side, and the bottom an angular or V-shape on under side. The next trouble was how could I get the bees into it, as I had never heard of driving; so I placed my frame-hive close up to the entrance of a strong skep, so that the bees were compelled to go through the frame-hive before they could fly, and as they required room they took possession of the frame-hive and built their combs very nicely: but all were drone-combs, and when the fall of the year came all the bees retired back into the skep and left a very good surplus of honey in the frames for my trouble; but it was so awkward to handle that I considered a modification necessary. The frames ran ends on to the entrance, which I now think is the best.

I considered what size I should make my next hive, which took me some time before I could start. At last I decided to make it 15×20 inches inside, but before I had proceeded far I saw a friend who had purchased a frame-hive, and he told me it was sold to him for the standard size for England, which was 14×16 inches from back to front, so I altered my size for that, which, after I had made six good, substantial hives, I found to be wrong. I could not afford to set them aside, as the difference of the standard size was so small, the depth of the hives being the same as the standard and being important to have all frames one size. I have always kept to the above size, so it will be seen that my size is three-sixteenths of an inch longer than the standard, although in speaking of them I call them the standard size. My way of storing away and preserving for winter is as follows:—

After the extracting from combs and partly-filled sections is completed, they are all returned to the hives for the bees to clean out; when that is done the sections are placed in section-racks — of course, sections, frames, racks, dividers, and doubling-boxes, are all well cleaned by scraping all propolis, &c., from them; then sections are placed in racks with dividers, and all just ready to place upon hives when required, the combs and frames are also replaced in doubling boxes. I then stand an empty doubling-box on four bricks at the corners to keep it from the ground and to give draught under it, then the boxes with combs are placed on the empty one and piled one on the other to the height of about eight feet, and the section-racks and sections are placed in a like manner, when an iron pan containing some sulphur is lighted and slid under empty box at bottom of each pile. When the sulphur is well alight the draught at bottom is closed by placing some old materials round the bottom of empty box, when the sulphur burns very slowly and all the fumes pass to every particle of comb and crevice (if crevices there are); when they have stood in this position for ten minutes the top draught is closed, so that the fumes of sulphur are shut in with the combs. After they have stood in this position for about one hour, each section-crate with sections receives about half an ounce of camphor, rolled up in a piece of rag in about the centre of crate, then each crate is placed in paper and tied up so that it resembles a neat paper parcel, when they are piled away in a dry place one upon another as high as the ceiling of room will admit. The doubling-boxes with combs are not put in paper, but each receives a piece of camphor, as above; and in storing them away they are placed one upon another with a piece of stout, or, maybe, two or three thicknesses of thin paper between. Combs, &c., treated in this way I have never known to be troubled with any kind of vermin whatever, and they come out when wanted as clean and bright as though they had just been taken from a strong colony; and when they are wanted there is nothing to do but remove camphor rag, and paper, and replace them on the hives where they are required. Of course, by the time they are wanted all the camphor will be evaporated. I may say here that I always keep about half an ounce of camphor, as above, in each hive which is stocked with bees, and since I have adopted the above plan my bees have always been very healthy and vigorous.

Extractors and all other tin ware are also well cleaned, dried perfectly, and while the tin is yet warm they are rubbed all over with a piece of rag with some oil upon it, using plenty of oil, so that it runs well into the joints; then the camphor and paper, or some other covering, and the result is that they never rust. I keep my extractor in a sack, which is very easily protected by just tying up the mouth. I am a great advocate of the use of camphor, both with the bees and with appliances which are stored away.

I may add that the first number of the *British Bee Journal* came into my hands in February 1883, and I have always continued to make the best use I possibly could of its pages, and I have yet plenty of room for learning. I make no doubt that 'Useful Hints' plan is quite as good as the above, but I do think the latter takes less time, which is a great consideration with many of us. I beg to apologise for trespassing so far upon your valuable space, but if it should be of any good to any of our bee-keeping friends, it will not be all waste time. Just a word or two more upon *Nepeta Mussini* plants. When you kindly inserted my last advertisement, I had no idea there would be many plants asked for, but applications arrived so fast that all the plants were cleared out in a few days, and I have got many applications which I cannot supply at present, so I have made arrangements to strike another large batch, so that no one should be disappointed in the end, as I hope to be able to supply them in March 1889.—C. H. W., *Aylesford, near Maidstone, Kent.*

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

C. B.—*Honey Imports.*—We shall be reviewing the honey and wax imports and exports of the previous year in the course of a few weeks, when we shall endeavour to give you the information you desire.

JOHN WATSON.—You will find the sugars forwarded by you suitable for your purposes. We shall be pleased, at your leisure, to receive a report of your experience.

FAR NORTH.—*Amount of Stores.*—If your stocks have at present thirty pounds each, there will be a sufficiency to tide them over to the spring.

W. J. S.—*Queen fertilised.*—In the face of the very unpropitious weather we have had, and the lateness in the season when the queen was raised, we cannot say whether the young queen has been fertilised. Inspect the hive in February for the demonstration *pro* or *con.*

A. WOODHEAD.—The *American Apiculturist* is published monthly by Henry Alley, Wenham, Massachusetts; price one dollar per year.

L. W. R.—1. *Number of Frames when Feeding.*—It is not necessary that number of frames should have been reduced to that requisite *before* feeding. 2. *Reducing Frames.*—If any of the frames are empty, they may be removed. 3. *Proper Number of Frames.*—Six to eight. 4. *Winter Stores.*—If the stores are not sealed, there is danger of them becoming sour, and of dysentery ensuing. 5. *Empty Combs.*—The required empty combs should be placed in front of your hive. 6. *Brood Nest.*—Not necessary, seeing the cluster varies its position as the stores are diminished. 7. *Selecting Stores.*—Select the fullest ones to be left. 8. *Superfluous Stores.*—Place these behind the division-board, allowing the bees to get at them.

A PUZZLED ONE.—*Queen Deposed.*—The bees have deposed the queen because she was aged, or in their opinion unequal to her duties. The probability is that the hive is now queenless.

W. D. and T. C.—We will place ourselves in communication with the manufacturer named in your letters.

E. A. FRY.—We should recommend you now to use sugar-cake. It is too late for syrup-feeding.

T. PEARSON.—A bad case of foul brood.

Business Directory.

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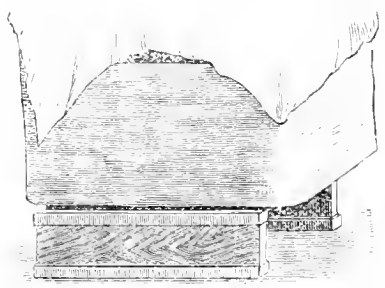
Editorial, Notices, &c.

PROTECTING BEES IN WINTER.

Those who have their bees in single-walled hives would do well to give them some protection during the winter. We know bees have sometimes been wintered safely without any protection whatever, but our experience does not warrant us to recommend this plan. Many use common boxes, which they place over the hive, and lay on the top a piece of zinc, or even a piece of roofing felt. We think it a great advantage to have chaff outside our hives and between the walls and outer casing. The editor of the *Bee-keepers' Guide* uses, and recommends, a very simple arrangement; and as it is inexpensive, and can be made by any one, we here give a description and illustration of it. Get a



piece of cloth half a yard wide and long enough to go round the hive; the ends are sown together, and it can then be slipped over a wooden rim, to which the edges of the cloth are tacked on the outside. The rim is then to be slipped over the hive, which it fits, and the space between the cloth and hive filled neatly with chaff, some being also placed on the top, forming a cone. The edges of the cloth are drawn together, and a couple of stitches with string twine will keep the outer band from slipping down. Over all place a square yard of cotton cloth which has been previously waterproofed by painting over with hot tar. The corners must be drawn down, as seen in illustration, and securely fastened to the cloth band by tacking a few stitches with a needle and twine.

Straw skeps might also be protected in the same manner, and should require no disturbance until spring. Should it be requisite to give sugar-cake in the spring, it can easily be done by untacking one of the corners, lifting it up, and pushing on one side sufficient chaff to raise the quilts. We should prefer also to waterproof the band, as, in our moist climate, the chaff would be likely to become and remain damp.

Another simple way is to use, instead of the cloth, 'Willesden card,' which could be tacked on the rim and the top edges folded over. A square on the top, or, better still, a cover with the edges turned down, would keep all secure from wet. Almost anything can be made with 'Willesden card,' and the joints are easily made waterproof by putting hot tar between the ends which lap over each other. A square roof coming to a point can easily be made out of one piece of card without a single joint. Fold the square diagonally across the corners in both directions, then turn over each corner an inch at the bottom, tapering to nothing at the centre, where the two lines intersect. Fold this over and turn under the piece projecting at the bottom. A few paper fasteners will complete it and keep it in the desired position. Such a cover can be made for a few pence, and will answer as well as a more expensive one, especially where cost is a consideration. Of course, being very light it would be liable to be blown off unless kept down somehow, but a piece of string will do for this purpose. We are surprised that 'Willesden card' has not come into more general use in the apiary, and we should be glad to see it applied more frequently. Its principal recommendations are that it is light, strong, waterproof, will take paint easily, is very cheap, and no tools are required but a knife for cutting it.

USEFUL HINTS.

WEATHER.—Rain and fogs. Fogs and rain. Seasonable (?) November weather! Sincerely do we pity the 'troglodytes' (dwellers in fog) of 'famous London town.' Not that country fogs are enjoyable, but they are a mere bagatelle compared with a modern London fog. A country fog is white, and is only a shade removed from a healthy atmosphere. A London fog has the additional ingredients of clouds of smoke and soot, which render the foggy air of the metropolis terribly destructive of life. The Londoner breathes four times as much carbonic acid gas in a fog as he does in fine, clear weather, and

the organic matter taken into his lungs is seven times as great. But '*necessitas non habet legem*.' Nevertheless some day before long we hope compulsory consumption of smoke will render the atmosphere of the great city comparatively pure when contrasted with its present condition. We English are never satisfied with the weather; and yet how very ungrateful it is to complain, after the seven or eight weeks of splendid, bright, dry, invigorating, autumnal weather we have lately experienced. For feeding our bees after a honeyless summer, for getting them comfortably into winter quarters, for clearing up and stowing away implements, appliances, hives, crates, odds and ends, and what not, had we ourselves made the weather we could not have made it more charming. Shame on the idle louts who leave their poor bees to perish from want, their hives and stands to rot for want of a coat of paint, and their apiaries, like a pig's court, covered with refuse and filth!

Entrances to frame-hives, if the hives are covered with impervious quilts, should be kept open at full width, and bees and other refuse must be occasionally removed by a bent wire. A slide of perforated zinc, with an inch wide opening, allowing passage for the bees, may guard the entrance and keep out mice. The cottager rarely keeps a sufficiently wide entrance to his skep in the winter months to allow of free ventilation. If he would keep the entrance from four to six inches wide, guarding it, as above recommended, with a strip of perforated zinc, his hives would be better ventilated, and his bees would winter better, than with the entrances plastered over with clay or cowdung, according to his present practice.

A New Feeder.—Messrs. Dines have sent us a specimen of their 'new shilling feeder,' which, although in course of manufacture in large quantities, has not yet been placed before the public. It consists of a bottle which holds about 1½ pints, and on the base of which is 'blown' in the glass 'Dines' Maldon 1*s*. Feeder,' so that no retail dealer can raise the price beyond that figure, the object being to supply the cottager with a really good feeder at the low price of one shilling. The edge of the bottle-neck is ground and accurately fitted with a screw-cap of nickel silver, which is incorrodable, and has eight perforations in semicircular form. The stand is formed of a block of beautifully white light and close-grained wood, 5½ in. square by 1 in. thick, having on one side a slight circular depression exactly fitting the screw-cap of the bottle, and the other side being hollow, in order to receive the upper portion of the cluster of bees when extending from below. A semicircular slot, ⅜ in. wide, corresponding with the perforations in screw-cap, is cut in the stand, through which the bees feed even during cold weather. By these means from one up to eight holes can be used for stimulation or rapid storage. On the bottle is placed a label, on which is printed an index finger (pointing as the bottle revolves to the numerals I. to VIII. stencilled on the stand), and also full directions for making syrup. On the label, when varnished, washing will take no effect. The feeder is most accurately finished, the perforations, which are slightly larger than those commonly used, corresponding exactly with the slot. We have given this feeder a full and searching trial, and have found all its fittings so accurate that not the slightest leakage has occurred. By its introduction we consider that a great boon has been conferred on all bee-keepers, especially on the cottager, and we trust that full publicity may be given to it in the advertising columns of our periodical bee-literature. We must not omit to remark that this feeder is manufactured very much upon the lines of the Raynor feeder, differing chiefly in the following points: (*a*) The bottle is rather smaller; (*b*), there is no cork lining to the screw-cap, neither is the index finger placed upon it, nor the central pivot, and the metal is different; (*c*), the interior of the dome on the under side of the stand is not lined with cloth, but may be rendered impervious to moisture by brushing over it a little molten wax. This feeder is certainly a marvel of cheapness, and how it can be produced for the price is also a marvel to us.

Candy.—An excellent kind of food for winter feeding, when autumnal feeding has been neglected, is 'Good's Candy,' which is made by mixing together liquid honey and finely-powdered loaf-sugar until the consistency of stiff dough is attained. The best sugar for the purpose is that termed 'Confectioners' Dust Sugar'—a powdered sugar as fine and white as the finest wheat-flour. The mixture should be well kneaded by the hand, and formed into cakes of the size required, which are to be laid on the top bars of the frames, above the cluster of bees, and beneath the quilts. The operation of feeding thus may be very quickly performed during any period of the winter, and with little or no disturbance of the bees. In skep-feeding the cakes are placed on the feed-hole, and pushed down upon or between the combs. The man who declines to bestow so small an amount of trouble and expense upon his starving bees deserves to lose them.

Virgin Queens.—With regard to the large consignments of virgin queens said to have been sent to England in late autumn, and distributed as fertile, we have no experience. During the last twenty-five years we have used largely imported queens obtained through the principal supply-dealers and agents, commencing with the late Mr. Woodbury of Mount Radford, Exeter; and out of many hundreds received we have met with two only which were unfertilised, and one impurely mated, and the price of the imperfect queens was honourably returned without the least murmur. These queens have been of all the well-known domesticated varieties, and the greater part were received in autumn, when prices are low. The loss by introduction has been so infinitesimal that it is not worth mentioning. From Mr. Benton we have not imported direct, but through his agents; and, in justice to him, we are bound to say that all his queens have been true to race, fertile, prolific, and fine specimens, being chiefly of the Syrian and Cyprian varieties. If so many unfecundated queens have been distributed over the country, it seems passing strange that we have had no complaints in the *Journal*. Englishmen are said to be very fond of airing a grievance, and these virgin queens cannot, in every case, have fallen into the hands of novices in queen introduction.

'Amateur Expert' should be more careful, when quoting, to quote correctly. When we wrote, in our last 'Hints,'—'There can be no doubt that there is room for improvement in the judging at our shows; when a less experienced judge, at some provincial show, reverses the awards of more experienced and capable judges, made at more important shows, the evil arising therefrom is great,' &c.; we neither made, nor intended to make, allusion to any particular show, but had in our mind a general reference to shows of past years, down to the present time. The inferences, therefore, which 'A. E.' has drawn from our words, as above quoted—after interspersing interjections by way, we suppose, of innuendo, the point of which is utterly lost upon us—thus, 'When a less experienced judge, at some provincial show (ah!), reverses the awards of more experienced and capable judges (Good! good!) made at more important shows'—the inferences, we say, which 'A. E.' has drawn, that 'all shows must follow the lead of the Royal,' and, consequently, that 'local shows need not appoint judges for hives and appliances,' and that, therefore, 'the winner at the Royal should simply walk through all the provincial shows and other exhibitors stay away,' are most unwarranted, since we made no allusion to the Royal nor to any other show in particular. We certainly should not have ventured to credit 'A. E.' with advocating the reversal of awards at various shows by various judges, in order to give 'other exhibitors' a chance of obtaining

prizes! Surely we had better institute 'consolation prizes' than encourage a policy so suicidal and unjust.

When our 'Hints' are erroneous, or impolitic, we are not only willing, but desirous, that the Editor, or Sub-Editor, of the *Journal* should freely use the editorial scissors on our MSS., but in future we beg respectfully to decline the criticisms of 'Amateur Expert.' When he becomes the Editor of the *Journal, if* we continue to write for it, it will be time enough then to submit to his critiques with the best grace that we are able. If, however, he is to be installed as 'Critic general,' let him exercise his ingenuity on our 'Editorials' as well as on the productions of smaller contributors who favour the *Journal* with the results of their experience. Let 'A. E.,' therefore, bear in mind the old maxim, '*Ultra vires nihil aggrediendum.*'

THE BRITISH BEE-KEEPERS' ASSOCIATION.

Discussion on the Paper of the Rev. J. L. Seager.

Mr. McClure said that his experience differed in some points from that of Mr. Seager. Bee-keeping was not known in Lancashire or Cheshire to any large extent. There were hundreds of persons in those counties who had never seen a bee tent, consequently the subject had not been worked out threadbare in those places as in Herts. With regard to the Secretary, the trouble was that nobody could tell him what he should do. He thought that if Secretaries were men who thoroughly understood the work, they should have little difficulty in gaining subscribers. With respect to Committees, the head-quarters of his own Committee were eighty miles distant from some parts of the county, and yet the attendance once a-month averaged from eight to eleven members. He certainly could not complain of any want of support by the Committee in his county. If the changes proposed were carried out, the work of the B.B.K.A. would be considerably increased, for it would have a secretary of every District Association to communicate with. No doubt the funds of the central body would be increased by the enlarged number of the Associations, because of the extra affiliation fees of one guinea each. He then called attention to the rule of affiliation, and suggested several alterations. If Mr. Seager's views were carried out, Rule 1 would be annulled, and he (the speaker) recommended that Rule 3 should be struck out. With regard to Rule 4, he thought that instead of two representatives, only one should be required from each county; and his Committee were of opinion that that one being a member of the B.B.K.A. should be *ex officio* a Committee-man thereof. That arrangement would increase the power of the B.B.K.A. materially, and give it new life. As for the time of closing accounts, the 30th of November might as well be the date fixed on, so that meetings might be held early in the year, and the reports out by March. His county did not get their books of bound-up reports till June or July of the present year. All such information should be in the hands of County Associations much earlier, especially considering that the B.B.K.A. demanded the reports of all branches by February. As to the privileges of affiliation, Rule 3 should be modified. Comb honey did did not sell in Lancashire, and why should they therefore be compelled to give a prize for honey which was unsaleable in their county? The rule also provided that no competitor should enter for more than one county competition. He did not see why a man should be prevented for entering for two shows if he happened to be a member of each Association. He did not approve of a competitor being allowed to take a medal from each show. In Lancashire and Cheshire it was thought that better exhibits would be obtained by throwing the competition open without restrictions. As regarded Rule 7, he considered that if honorary secretaries came up to the meetings, and were members of the B.B.K.A. (that is, subscribed thereto), they should be *ex officio* members of the Committee, and consequently entitled to vote. He also proposed certain alterations to Rule 9, and concluded by stating that the Lancashire and Cheshire Association was most anxious to work in harmony with the B.B.K.A., but at the same time hoped for an early alteration of the rules then in existence.

Mr. Webster agreed in great part with Mr. Seager's views. He thought it was very desirable that those Associations which had been formed from County Associations should be allowed to be affiliated with the B.B.K.A. If that were permitted there was no doubt that the number of Associations would soon multiply, bee-keeping would be better encouraged through the country, and that would mean an accession to the funds of the Central Association.

Mr. Garratt said that he had already written in the *British Bee Journal* on the subject raised by Mr. Seager, who had brought the matter forward in an admirable manner. There was little doubt that the time had arrived when it must be dealt with. He had some time ago expressed fears that the County Associations were doomed, unless some means were found to give a fresh impetus to them. However, the ground which had been traversed that night was very wide indeed, and he thought they were hardly prepared to go so far in discussion as Mr. McClure wished to lead them. His suggestions amounted to a proposal for a revision of the constitution, which could not be entered upon without considerable deliberation. His own experience of County Associations led him to think that the work for which they were organised had been done. Although the importance of bee-keeping had not been preached in every portion of a county, yet the practical aspect of the matter had been before the public in all the counties, and the question was, how was the interest to be maintained? They must look at the subject chiefly as it concerned the welfare of the B.B.K.A. The independent multiplication of societies would bring difficulties. He supposed Mr. Seager meant that the County Associations must cease to exist where the local societies sprang up, at any rate some constitutional change must be provided by which the County Associations might disappear, and others rise in their place. He thought that Mr. Seager must feel that if his suggestions were adopted, they were on the threshold of a very great disturbance in all arrangements which had existed. He was not one to shirk a duty because difficulties presented themselves, and he felt sure that unless something were soon done the failure would be much greater than if the task were faced at once and some changes adopted. What form those alterations should take, time would be required to decide. A Sub-Committee should be appointed to deal with the matter, and present it for discussion at the next Annual General Meeting.

Mr. Woodley suggested that the B.B.K.A. should bring itself, if possible, into more intimate contact with the County Associations. He quite approved of Mr. Seager's remark that the Committee of the B. B. K. A. should be more representative, and argued that the County Representatives should have a vote. It would be a good thing to form a Council from the County Representatives and Members, and from that elect a Committee. He thought the Committee of the B.B.K.A. lacked influence owing to its exclusive character, and should be more 'democratic' in composition.

Mr. Graham had acted as provincial Secretary under Mr. Bligh, and quite concurred in Mr. Seager's remarks as to the difficulty of getting work done under the present arrangement. That gentleman's proposals formed a sort of Local Government Bill, and had not been brought forward a day too soon. He thought that County Associations on the existing plan should not be abolished, but allowed to go on as long as they could,

As soon as the proposed rules came into force, his own county would split into two branches, each becoming affiliated with the B.B.K.A. Middlesex would divide into four districts. Hitherto it had been almost impossible to get representatives from those four districts to attend a general meeting of the Middlesex Association, although the room in which they were now assembled had been offered them for the purpose. Bee-keeping could be extended much more than it had been. There were many districts in his knowledge where a real live educated bee-keeper was an unknown quantity.

The Chairman said that since he had become connected with the County of Yorks he had done his utmost to bring about decentralisation, and by that means strengthen the hands of the central authorities. If the *raison d'être* of the B. B. K. A. was to disseminate bee-keeping in the provinces and the parent body had founded County Associations for that purpose surely by analogy it was the duty of the latter to form District Associations. He had found that the general question asked by persons in the country when invited to join an Association was:—'What shall I get if I subscribe?' They always wanted a *quid pro quo*, and it was important that a good answer to that question should be given. There was no doubt that Mr. Seager was quite correct in saying that as a rule a whole county was unmanageable in the hands of one Secretary. In his own county they had started five District Associations, which had grown lately and were doing good work. In many cases a County Committee was little more than an empty name; its meetings were attended by the Chairman, Secretary, and possibly another, and under such circumstances it was almost a mockery to go through a meeting. It was perhaps a question whether all the Associations which would spring into life after the introduction of the new, rules would be able to affiliate themselves to the British, the fee of one guinea being a large item to a small auxiliary; that, however, was only a matter of detail. He recommended that the Counties should be divided into the Parliamentary divisions; the Local Government Bill might be taken as a guide. He thought all members of Committees should be bee-keepers, or they would lack enthusiasm for the cause. Business-like capacity only was scarcely a sufficient qualification.

Mr. Hooker explained in reply to Mr. McClure that the reason of the delay in issuing the bound-up reports was that some of the counties did not forward their reports to the central office until the month of June.

Mr. McClure replied that the rules should be strictly adhered to. In Lancashire and Cheshire there were six different Associations which could be affiliated to the B. B. K. A. under the proposed new system.

Mr. Garratt repeated his suggestion that a Sub-Committee should be formed, so that Mr. Seager's proposals might take practical shape.

The Rev. J. S. Seager, in reply, said that with regard to affiliating Associations he imagined some limits would have to be placed on that, but it was outside his province to sketch out rules at present. Associations desirous of affiliation would have to state over what area they intended to carry out their work, and care must be taken to render it impossible for three or four persons to start a hole-and-corner branch. In reference to a remark made by the Chairman, he wished it to be distinctly understood that he did not mean to suggest that Committeemen need not be bee-keepers, but that there was no necessity they should be advanced bee-keepers, or men of prominence in the bee world—an idea which hitherto appeared to be paramount in the selection of the Committee. Mr. McClure, for instance, was now a skilful bee-keeper, but he knew little or nothing about the subject when he became Secretary of the Lancashire Association, and his energy and success in that county were well known. The question of affiliation fees was a matter which the Committee would have no difficulty in settling; a sliding scale could be adopted, and regulated according to the number of members in each Association. The affiliation fees were no source of income to the B. B. K. A., 1*s.* thereof being always returned in the form of medals, to say nothing of postages, &c. From the descriptions of Mr. McClure and the Chairman it appeared that Lancashire and Yorkshire were in a barbarous condition so far as bee-keeping was concerned, but he was happy to say from personal experience that the converse of that was true as regarded the hospitality of bee-keepers in those counties. No doubt the Executive of the B. B. K. A. were open to the charge of being an exclusive Committee, but he could assure his hearers it was not the desire of his colleagues that that should be so. The difficulty was that only those persons who lived near to London could spare the time and expense to attend the meetings. They of the Committee would only welcome with open arms a friend of the cause living 200 or 300 miles away, if he would join them. He did not propose that the present County Associations should be done away with, but that their existence should not prevent the formation and affiliation of other Associations in the same counties. He could not agree that the new Parliamentary division of Counties would be a satisfactory arrangement. With regard to the question, 'What am I to get by joining your Association?' etc., he would have two answers thereto, either of which should be used according to the social position of the interrogator. If the latter were a person of good position, to whom a sovereign was a a small matter he would reply:—'The aims of this Association are of a benevolent character, designed to promote the welfare of the poorer classes. The institution is doing a great work, and on that ground alone we confidently appeal for public support.' In the case of that class who have to think twice before parting with a few shillings, he would say: 'You will get exactly what you make us give you. The Committee of the B. B. K. A. will be in your hands. You are the electors to all intents and purposes of the Association, and you have the power to decide what shall be done.' If the Local Associations paid their affiliation fees they ought to have a vote for the election of the Committee. He hoped a Sub-Committee would be formed in that room to draw up a report to be presented to the B. B. K. A. A small Sub-Committee would be best, doing the work if necessary by correspondence, and the members holding a final meeting together in London.

A general conversation ensued, the outcome of which was that a Sub-Committee was formed as suggested, when the following Members were proposed and seconded and elected thereon:—The Rev. J. L. Seager (who at first demurred on the ground that the Committee ought to consist of persons not on the Council of the B. B. K. A.) Mr. McClure (who complained that he lived too far from London), Mrs. Currey, Mr. Grimshaw, Mr. Garratt, Mr. Webster, Mr. Graham, and Mr. Meggy.

Mr. Garratt proposed, Mr. Cooper seconded, and the Chairman supported, a vote of thanks to Mr. Seager for the valuable suggestions he had laid before them, the Chairman expressing a hope that the decisions of the Sub-Committee would be put into shape with as little official delay as possible and placed before the Council of the B. B. K. A. Mr. Seager briefly acknowledged the compliment.

At this juncture a large number of the audience left, and the Chairman intimated that the paper he had intended to read that evening, entitled 'The Sting and its Poison,' should be held over till a future occasion.

Mr. Hooker exhibited a hive of his own design, executed by Mr. Neighbour; the speciality of which was that the feeder could be placed either above or below the hive according to the wish of the owner.

The Chairman and others disapproved of feeding at the bottom, owing to the disturbance caused by lifting

the hive to place and remove the feeder. Mr. Hooker replied that the contrivance was so arranged that facilities for feeding might be given which might, under certain circumstances, be desirable.

A vote of thanks having been passed to the Chairman and briefly acknowledged, the proceedings closed.

BEE-KEEPERS' VOCABULARY;

Or, Glossary of Technical and Scientific Words used in Works upon Bee-keeping.

Bee-line. *n.* (*L. linea*, line from *linum*, flax)—A straight line between two points, such as a bee was supposed instinctively to take when returning to its hive; the shortest line from one point to another.

Bee-lippen. *n.* A bee-hive. (Somerset.)

Bee-liquor. *sb.* (*L. liquor*, from *liqueo*, to be liquid.)—Mead, made from the washings of the combs. (Kent.)

Bee-literature. *n.* (*L. literatura*, from *litera*, letters.)—Books and periodicals treating of bees and bee-keeping.

Bee-louse. *n.* (*Sax. lus*, to creep.)—A parasite found on the honey bee in Southern Europe called *Braula cæca.*

Bee-maggot. *n.* (*W. macai*, plur. *magiod*, a grub, from *magu*, to breed.)—The larva or grub of the bee.

Bee-martin. *n.*—Name often given in some parts of the United States to the king-bird, *Tyrannus Caroliensis.*

Bee-master. *n.*—Used to signify a bee-keeper, but should properly be applied only to one proficient in the art of bee-keeping. See *Apiarian, Apiculturist.*

Bee-mite. *n.* (*Sax. mite*, a small insect.)—See *Acarus.*

Bee-moth. *n.* (*Sax. mot*, from Goth. *matjan*, to eat.)—Moths whose larvæ are destructive of combs. There are two species, *Galleria melonella* and *Achroia grisella.* The former is very common in Southern Europe. Wax moth.

Bee-nettle. *n.* (*Sax. netele.*) Species of dead nettle visited by bees, *Galeopsis Tetrahit* and *Lamium Album.*

Bee-pap. *n.*—Used by old writers generally to designate the food of larval bees; by Berlepsch and others for the first soft food of larvæ provided by the nurse bees.

Bee-pasturage. *n.*—Flowering plants from which bees collect nectar.

Bee-pest. *n.* (*L. pestis*, a plague.)—The disease known as foul brood; bee-plague; a disease which Hilbert stated was not only a disease of the brood, but also of mature bees, sometimes including the queen. See *Bacillus alvei* and *Bacillus alvearis.*

Bee-plague. *n.* (*L. plaga*, a calamity.)—See *Bee-pest.*

Bee-plants. *n.*—Plants visited by bees.

Bee-pot. *n.*—A bee-hive (Sussex).

Bee-protector. *n.*—See *Bee-dress.*

Bee-poison. *n.*—Formic acid secreted from the blood by the poison-glands, collected in the poison-sac, and ejected through the openings in the lancets of the sting.

Bee-scep, or scap. *n.* (*A.-Sax. scep*, basket.)—A dome-shaped, or round and flat-topped hive made of straw or osiers; in Sussex, the straw hackle placed over the hive to protect it.

DESTRUCTIVE FIRE AT THE 'STONEREIGH' APIARIES, PORTSLADE.

We regret to inform the readers of the *British Bee Journal* that our friend, Mr. Frank Reed, proprietor of the above apiaries, has sustained a severe loss in the destruction of his bee-house and its contents by fire, the whole being totally consumed. The carelessness of a workman caused the disaster, a lighted match having been incautiously thrown on a quantity of touchwood. We sympathise deeply with Mr. Reed, as he has since informed us that he has lost the whole of his appliances, supers, &c., necessary for the working of an apiary of 150 stocks.

Mr. Reed has been an extensive bee-keeper for many years, and has carried on a very valuable work in a scientific and unobtrusive manner. He is a 'specialist' in Carniolan bees. He was fortunate enough some few years ago in procuring some specially selected, pure, imported queens from a remote part of Carniola, and was so impressed with their good qualities, as regards fecundity of queens and honey-gathering properties, that he decided to make this variety a speciality; and from what we have recently seen he has certainly got (through care and judicious crossing) the finest samples of Carniolan bees we have yet seen; they are very evidently superior in colour and disposition to the imported Carniolans of the present day and perfectly acclimatised. A few queens we had recently from some supposed respected dealer in Carniolans are anything but what they ought to be. Mr. Reed has had a Carniolan stock of this past summer, the queen of which has kept a large hive of thirty frames crammed with bees, and had a brood-nest of twenty-four frames of the possible thirty which stored sufficient honey in twelve days (Mr. Reed, fortunately, being favoured with a honey flow of that duration) to winter its own stock, and sufficient left for two others.

We were pleased when we saw Mr. Reed, to note that he was not cast down, though his loss is a severe one, nothing being insured; and from his determined and persevering character we know that he will at once set about repairing his loss and putting everything to rights. We wish the enterprising proprietor every success in his interesting pursuits for the advancement of apiculture. —E. New, *Southwick.*

Honey at the Olympia.—The honey sections on show at the stand of the Irish Bee-keepers' Association at the Irish Exhibition, Olympia, have been purchased by Mr. A. Courts Smith, of Cambridge Street, Hyde Park.

Birds and Bees.—As regards sparrows, swallows, and martins taking bees, as mentioned by the Rev. W. E. Burkitt, I am pleased to say such is not my experience, although I have watched them many an hour. On the other hand, I can assure readers that I have scores of times seen both martins and swallows followed by bees on the wing, for what purpose I was never able to satisfy myself, without it is curiosity, as seems to be the case when bees and wasps fly round persons without attempting to sting.—J. Hiam (*Journal of Horticulture*).

Bees in New Zealand.—A considerable quantity of German red clover is annually imported into New Zealand, where it flourishes, but has not hitherto ripened sufficiently to yield seed for reproduction. This has been explained by the absence of those fructifying insects which, it is well known, contribute so much in Europe to the propagation of many kinds of plants. In 1885 a parcel of 100 wild bees was imported from England, and set free in the neighbourhood of Lyttelton. They multiplied greatly, spreading over a considerable district; and already the farmers near Lyttelton were able last season to gather and make use of clover seed from their own fields.—*The Field, Oct. 6.*

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements.)*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

THE B.B.K.A. AND AFFILIATED ASSOCIATIONS.

[1860.] I have read Mr. Webster's letter on the above subject with great interest. His views are practically my own. But there is one passage in his letter on which I should like to remark. He says, 'The proposal . . . . was at once taken from the county representatives' hands, and proposed and seconded by two members of the B.B.K.A.'s Committee.'

As I am the guilty person, and my motive seems to have been misunderstood, I am anxious to explain that nothing could have been farther from my mind than to be 'impolite' in the matter. No one can be more desirous than I am for the regeneration of the B.B.K.A. Committee, or more ready to welcome the county representatives as *ex officio* members of the Committee. Time was pressing, and I was anxious, *as all present seemed unanimous*, to bring the matter to a close, and get on to other business, and I know that Captain Bush's motive in seconding the proposition was identical with my own in making it. I cannot at this moment recollect who the gentleman was who brought the subject forward, but if I appeared to him to act rudely, or inconsiderately, in my desire to get on with business, I am exceedingly sorry: as, indeed, I should be if any action on my part tended in any degree to hinder the revival of good feeling between the parent Society and those in affiliation with it.—J. LINGEN SEAGER, *The Grange, Stevenage, November 2nd.*

COUNTY ASSOCIATIONS.

[1861.] Taken in conjunction with the important address given by the Rev. J. L. Seager and the discussion which followed thereon, Mr. Webster's letter seems to me to be most opportune. The former gentleman has brought forward proposals of a far-reaching character, which, in my opinion, opens up the relationship existing between the British B.K.A. and the various County Associations, and makes it imperative that the whole question should be thoroughly investigated. I think no one will question the fact that the interest of the County Associations in their worthy parent has been getting somewhat cool of late years, and *vice versâ*. I imagine the parent has not shown that active interest in her children she did some few years back. Be that as it may, I am glad to find that the fact is being recognised and that an effort will be made to bring about a different state of things. But I would respectfully submit that the reverend gentleman in his suggestion has begun in the wrong place, for if County Associations, as they at present exist, are inclined to raise the question as to the desirability of affiliation, how can he expect that, under the same circumstances, smaller Associations will be likely to come in? Now that the spirit of reform has been started, let it commence in the right place, viz., at the top. In listening to Mr. Seager's very able address, and feeling that he more or less represented the views of the Committee of the British B. K. A., I could not help thinking of the saying, 'Physician, heal thyself:' for I have no hesitation in saying that it is the organization and constitution of the parent Society which have, in a large measure, brought about the want of confidence alluded to by Mr. Webster. With your permission, Mr. Editor, I would venture to point out one or two sources of weakness in the B. B. K. A., not in a spirit of captious criticism but with the earnest wish that the parent and her children should increase in strength and goodwill.

We all of us, I think, are prepared to recognise the great work done by the British B. K. A. before County Associations were originated, and the important step which they then took, and which, I venture to think, was a wise one; but it naturally follows that as County Associations were developed, the support given to the former by the general public would in many cases be diverted to the local Associations, and certainly the stronger these became it must be more or less at the expense of the parent Society; and here, I think, is where she is at fault. Having reached this point she should have recognised the changed circumstances, and not to have the fact forced upon her, that her children are growing up and capable of thinking for themselves. In my humble opinion, the B. B. K. A., if she would flourish, must eventually become the head of a confederation of County Associations, and each shall take an active part in the management of the central body. Now, how is this to be brought about? In the first place, County Associations must have voting power on the Committee. We shall probably be told that were this power given to county representatives the central body would be swamped. Personally, I do not think this would be an unmixed evil; but this could be met by substituting *one* county representative for two, as at present, or only those counties whose membership came to a given number would be entitled to vote. Now supposing this were granted in the place of, as now, a body of gentlemen, all of whom are unquestionably estimable men, with the earnest wish to do all in their power, you would have a body representing bee-keeping from all parts of the country, from whom we may expect to get what is most likely to help forward the industry in which we are engaged; it would, in fact, become a national body instead of what almost amounts to a close corporation. Mr. Seager, in his reference to the scheme sketched in the *Berkshire Bee-keeper*, seems to imagine that the writer is adopting his ideas given some two years since. It is true some of those ideas are embodied in that scheme, but there is a considerable difference in it as a whole; the most important of which is that in dividing the county into districts the representative principle is carried through the whole, and it requires only one more additional feature to make it complete, viz., that the representative principle (*with voting power*) may be carried on to the parent Society.

If the British B. K. A. wishes to retain her influence over her children, I feel sure the cumulative voting for the Committee must be done away with. It gives the idea that the Committee is composed of a clique. I believe that it has been shown to be possible for a number of members to combine and secure their own election; is such a possibility calculated to increase the respect in which such a body is held? Besides, is a man's interest in anything regulated by the amount he pays? Certainly not. I venture to state that, compared with the four-vote members, those who are entitled to one vote only take a greater interest in the welfare of the Association; and, if so, why should he be swamped by his wealthier neighbour? In all probability his 5s. represents more from him than the guineas of the other—necessary as they are to the Association, I do not think they should have the voting power they at present possess.

I will conclude with two other suggestions, that opportunity should be given for the discussion of grievances,

both in the columns of the *Bee Journal* and also at the annual meeting of members. It is a well-known fact, that at the last several important resolutions were placed on the agenda paper; when these are withdrawn, owing to pressure being brought to bear upon the proposers by individual members of the Committee, it is not calculated to improve the respect in the British B. K. A. The fact is, the days of close corporations is past, and the sooner the fact is recognised the better it will be for the British B. K. A., 'who,' as one of their Committee remarked to me the other day, 'cannot do without the support of the counties, but that the counties can do without the patronage of the British.'—A. D. Woodley, *Association Secretary and Expert of the Berks B. K. A., 24 Donnington Road, Reading.*

CARNIOLANS, &c.

[1862.] It is certainly much to be regretted that th yellow bands have been allowed to appear in some of the Carniolans imported direct from their native country, but it is far more to be regretted that Mr. Benton should have so large a share of the blame.

I had given 'Amateur Expert' credit for more good sense than he appears to exhibit in quoting as fact Mr. Alley's groundless statements in reference both to Carniolans and Mr. Benton. Bare assertions, especially when prompted by prejudice, and on the face of them showing the grossest ignorance, will not help the matter in the least. We have two plain facts before us: one is, that the pure Carniolan worker has no distinct yellow bands; the other, as stated above, is that some of those imported from certain districts have one and two distinct yellow bands. The duty of breeders is, therefore, plain, and in their own interests there is no question that the yellow bands must be rigidly excluded. For his own credit's sake there can be no doubt that Mr. Benton is doing his best to breed to the true type, but he has apparently located himself in a district where he will find this difficult, if not impossible, to entirely eradicate the yellow band in all cases. That he has exported numbers of pure queens, showing the desired traits in their worker progeny, I am fully aware; but he would certainly find it more to his own interests did he take up his position where he need not have the fear of his queens mating with drones from undesirable stock.

Nor is the blame all to be laid at the door of the breeder. Customers *will* have yellow queens, and it must be acknowledged that such are not only more beautiful, but more readily found; though it should be distinctly understood that the nearer we breed back to the original character the darker our Carniolan queens become, until we have them even darker than our natives. Many of such queens have been sent over to, and bred by, myself, and yet customers are seldom satisfied with them at first sight.

'All the good points possessed by those bees sold as pure Carniolans by dealers are derived from the Italian blood by which it is evident they are crossed,' says Mr. Alley; and I want the reader to take particular notice of this statement, as it will presently be shown that Ligurians did not satisfy him until new blood of *another variety* had been added to his own stock. Why did he not take the trouble to prove the cross between Carniolans and Ligurians before allowing his pen to put down such an idle scratch? The closest and most careful observation has proven that those Carniolans of the original type are the bees that excel Ligurians, far and away, while those Carniolans which are apparently crossed with Ligurian blood are of little use for hard business.

Among other unwarranted statements, Mr. Alley says he does not believe there is a pure Carniolan queen in the United States, and concludes by the remark that, 'If people depend on Benton for pure queens, they will get awfully deceived.' It makes one smile to note the bare-faced conceit of the man who would make such remarks, knowing all the time that he had made no attempt to verify the remark he thought fit to make as a bare assumption. Mr. Alley is fully aware that many honest dealers offer pure Carniolans for sale in the States, but it does not appear that he made any inquiries, or attempted to get from them any evidence, that would support his hasty assertions.

Mr. Benton, I believe to be honest in all his endeavours, or he would never have stuck to the foreign queen trade, with all its difficulties and dangers, when, by returning to his own country, he could command a certain and more comfortable income. It should be patent to all that such an undertaking in a foreign clime, with constant heavy travelling and other expenses means, to Frank Benton, a bare subsistence; to any other man, starvation and utter collapse. It is time that the continual cry and harping as to the great profits of the queen-raiser should receive their death-blow. It is a source of income to those few who are capable of making it a success, but it is only the few who can help make up a living by it. Let any of those harpers try it, and I can give them the satisfaction of knowing they would not make a fortune did they secure twenty shillings for every queen they could sell.

Returning to Mr. Alley's accusation, one might say with equal, or perhaps with more, truth, that 'If people depend on Henry Alley for *pure Italians*, they will get awfully deceived.' I would ask, What has become of his beautiful, prolific, and industrious Syrians, of which not long since he had and sold a large number? Does his present strain of Italians (he calls them such) owe their superior quality to this wholesale infusion of Syrian blood? 'As honey-gatherers they have no equal in any race. . . . . Of all the bees I have, the Syrians are the only race that keep their stock of honey all the time.' Again, 'I cannot speak too highly of this race of bees. They possess every desirable quality, and the wonder is that they are not more generally adopted by bee-keepers.' Yet again, 'I am a lover of the Holy Land bees, and can show some of the largest colonies of this race that can be found in this country, and they are so much superior in every quality to any of the others that I expect soon to see them universally adopted.' Such was Henry Alley's opinion in 1884, when he was selling as many Syrians as Ligurians: all from the same yard, mind, with no attempt to confine the drones of either yellow race. How could his customers know if the queens were to be pure or crossed one way or the other? for it is a simple fact that no two races can be produced in their purity at a wholesale rate at the same time in the same apiary.

At the present day we hear nothing of his Syrians, and Mr. Alley considers his strain of *Ligurians* superior to *any others*. If he has benefited by the Syrian blood, and his customers are also doing so, so much the better for all concerned; but why does he not acknowledge that his Ligurians are *not* pure Ligurians, and let others know what they are getting?

Ligurians are excellent, I know; that when crossed with Syrians, they are vastly improved I am fully aware, and so it will be found in the case of Carniolans crossed with Syrians. But if the breeder offers a pure variety, it is his duty to do his very best that he sends what is ordered, according to his offer. If he considers a certain cross to be of greater advantage to his customers, let him plainly state his case, but let the customer know that he has what he asks for.

I quite believe that Alley's present strain of bees shows a great improvement upon the original Italians, for the reasons I have just given, but why call them what they are not, and at the same time charge another with a similar act in a case where he is able to show no proof?—Saml. Simmins.

MR. BENTON AND CARNIOLANS.

[1863.] In looking through the *Journal* last night I noticed a letter from Mr. Benton in reply to a remark made by 'Amateur Expert' some weeks since. Now, I am one of those who read the 'Jottings' of 'A. E.' with a great amount of pleasure and profit; and as to the Carniolan bees, I, with others, must feel that all imposition should be brought to light. I have had several queens from Mr. Benton this year, both for myself and also customers, and in *every* case but *one* they have proved most satisfactory; and as soon as I wrote about the failure of this queen (which I know now was through no fault of the sender), not expecting another for her, I had one sent per return. All the queens have been very prolific, thrown perfectly *grey* and gentle workers, and could not by any possible means be excelled. I am waiting to hear from a customer now, expecting I shall have to send for some three or four more for him, *i.e.* if the weather will admit of it.

I merely send this as being my personal experience. Perhaps it would do the subject good if others would kindly do the same.—CHAS. HOWES, *Cottingham, November 3rd.*

A CHAT ABOUT QUEENS, QUEEN REARING, ETC.

[1864.] Only recently the expectations of many bee-keepers were raised by an article in the *Journal*, promising untold advantages to be derived from a peculiar kind of foundation, of which no definite particulars were given; and, when later, the device was known and proven, it was only to show an entire waste of printer's ink in heralding its approach. I have been much surprised to see a similar waste of ink and space in the *Journal*, p. 497, No. 1833, where an article is copied from the *American Apiculturist*. The reader profits nothing, simply because no information is given. If the promised new method of queen-rearing is to be any good, and if queens are to be artificially reared in the hive that still holds its own queen, what object is to be gained by sounding a trumpet without explaining the method of doing it?

As a matter of fact, it is known to many bee-keepers that bees will build queen-cells time and again in the same hive with their own queen, with whom they have constant communication, provided only that a portion of the brood-nest be parted off with perforated zinc, and in which portion, by arranging the desired eggs, the cells are generally built only upon such prepared frame. I have had some of the finest queens reared upon my prepared frames placed in the hive without removing the brood at all; and my opinion to-day is that the future will still see the removal of the queen, but not all the brood, for the purposes of wholesale queen-rearing; and more, that the finest queens are to be secured by such means, as the bees go to work upon the cells with more *vim* than when preparing for natural swarming even, and decidedly with more vigour than by any half-hearted process induced, artificially, while there is a queen already in the hive.

The past season has been almost as unfavourable for queen-fertilisation as for the production of honey. Occasional spells of warm sunshine would finish off a few batches of queens, though perhaps some of them had waited from three to four weeks for just a warm hour or two at the middle of the day. Talk about the profits of queen-rearing! Why, the anxiety, together with worry from customers, who often will not wait, while the queen-raiser is compelled to do so, is enough to frighten many men out of the business. In a season like that just gone by, there is a great deal more work than ever gets paid for; so many queens miss, necessitating a far greater supply of virgin queens to keep up a succession, and consequently greater cost in securing a certain number of fertilised queens.

A poor season this has been for the few attempts that have been made to dispose of, or exchange, virgin queens—the outcome of the late empty discussion upon the subject. Where is to be the advantage? Fancy, for the sake of securing new blood, a bee-keeper is to purchase a virgin queen or two at half the cost of a good fecundated one! Why, he can have any number from the latter, and have the same certainty of his young queens being met by drones unrelated to them, and more often than not by mongrel drones in either case as most apiaries are situated. Certainly the advantage is on the side of buying pure fertile queens, when the bee-keeper really knows what he is using, while he is working with far greater economy.

I have noticed virgin queens advertised at three shillings each; but to bring the question within the bounds of supply and demand, that price will have to be very considerably reduced before any trade can be established in this commodity. I would rather sell virgin queens for two shillings a-piece than those mated for seven or eight, as the real cost is added by the risk of mating, occasional delay, and expense of maintaining nuclei.

One of your correspondents, I remember, gave a somewhat lengthy article upon the question of virgin queens and fresh blood. He commenced with the statement that he did not believe there was a single apiary in the kingdom where a variety of bees could be kept in their purity; and, strange as it appears, the burden of his entire article was to show the necessity of introducing new blood to prevent degeneration. And how did he conclude his article? Why, by capping the whole of his contradictory method of reasoning by the statement that he knew of apiaries of natives that had degenerated because no other bees were near enough to intermix with them!

While his own statement would show that, after all, there are districts where any variety may be bred in its purity, I can also tell of several such that could be reached, all in an easy day's journey, and so far from the bees there being degenerated, I do not suppose there are any other apiaries in the world where more care is taken to keep up a thorough infusion of the very best fresh blood.

At what age queens should be superseded is a question which still exercises the minds of many? My own opinion is decidedly in favour of young queens, reared in July, when they come in for the following full season's work. As a rule they fall far short if kept for a second season, and, judging from my own experience, I cannot advise that they should be. It is certainly an unwise policy—I cannot say method, because there is no method in it—to let a stock run on until its queen is superseded by her subjects; such an event being likely to occur more often than not at the time of year when queens cannot be mated.

The loss of time experienced in spring with old queens presiding is a serious consideration, though it is hardly possible to believe any bee-keeper could then fail to take the matter in his own hands by destroying the queen and uniting the stock to another. The only bees I have found to make a judicious arrangement of the kind have been Ligurians. I have had several instances where these would persist in rearing cell after cell (only one or two at a time) because their queen-mother was beginning to fail, though still keeping up an extensive brood-nest. The cells were removed, but in one case during the past summer I allowed the cell to hatch. This was about the beginning of July, and the young queen was nearly four weeks old before she could get mated. The old one continued to deposit many eggs, until presently both mother and daughter were laying side by side; sometimes were to be found upon the same comb. This continued for

some weeks, when I removed the old mother, putting an end to her career.

That many Americans consider it best to allow the bees to settle the matter for themselves does not at all contradict my statement that only young queens should be used, as it is well known Ligurians are with them great favourites, and the peculiar trait possessed by this variety of thus superseding their queens before actually worn out should account for the apparent difference of opinion.—SAMUEL SIMMINS.

DUMMIES, FEDEERS, &c.

[1865.] There appears to be associated with the pleasure of keeping the dear little 'flies with pins in their tails' an ardent wish to make every discovery, be it great or small, common property. Bee-keepers, in fact, vie with each other as to who can be of the greatest assistance to his neighbour. This unselfish spirit, in such an intensified degree of sweetness, is, I think, peculiar to the bee-keeping fraternity. Possibly our frequent contact with that which is so sweet,—'for what is sweeter than honey?'—may account for this sweetness of disposition. Or can we seek its origin in the mysterious influence exerted upon us by the benevolent and gentle-tempered matrons and youthful princesses we handle, so unwilling to show irritability under much provocation that they lovingly caress in place of scratching the hand of their supposed tormentor?

Now for the practical. I have found 2-inch thick dummies most useful nearly all the year round. But to give satisfaction they must be well made. I make mine of a frame of $\frac{1}{2}$-inch pine. The dummy should hang one $\frac{1}{8}$ inch clear of the bottom of the hive. I use chaff for filling the dummy; sawdust is too much acted upon by the moisture in the hive, and bulges the sides of the dummy if they are thin. The sides I make of $\frac{1}{8}$ pine, cut $14\frac{3}{8} \times 8\frac{1}{2}$; these are nailed on the frame. There will thus be $\frac{1}{16}$ inch between each end of the dummy and the side of the hive. This gives the required amount of play. I have tried tacking calico on the frame in place of wood, but it does not do, as some energetic bees when out of work amuse themselves by cleaning out the inmost recesses of the poor dummy's interior. If given time, not one piece of chaff will they leave in the dummy; all will be carried out of the hive. These dummies are perfect for contracting a hive and making it snug. I have substituted them for the ordinary dummy. I put in two or more as required. My hives are $14\frac{1}{2} \times 16$ inch inside. The bees can be fed on the other side of the dummy, if only one be used.

Now a word on feeders. I make mine all sizes and shapes, from a big one holding six or eight pounds, to a 'tittie' one (as they say in these parts, the smallest room in your house is always called the 'tittie' room). Just anything does for a feeder if watertight. I used to make elaborate scientific ones; now the odd bits of wood about the shop form the feeders. A good fast feeder and one hard to beat can be made as follows:—Make a box of $\frac{1}{2}$-inch wood $14 \times 8 \times 3$, outside measure: screw together, but nails do well. Divide the box into three parts with thin pieces of rough wood, to keep the little fellows from drowning. Paint the joints outside, and nail two bits of wood on the bottom, to form feet, to save crushing bees when putting the feeder in the hive. I do not bother with divisions, as my bees are grand swimmers and climbers. Some like to swim, not like a dog, or a pig which is supposed to cut his throat with his paw as he swims, but like a true British-island-bred bee. By the way, my Italians think nothing of swimming a 4-inch feeder; others, who are better at climbing than swimming, climb on a neighbour's back near the side; he subsides, while bee No. 1 steps on terra firma, or, shall we say, steps on a deal firma? The bees thoroughly appreciate the fun, and it stimulates their appetites. After a little careful selection I anticipate having a good strain of swimmers and climbers. The bees of the present day are very deficient in these qualities; hence we hear of them being washed away by the rain. My strain, when unable to fly home on account of heavy rain, will swim, and finally climb up into their little cot. This autumn my poor little fellows are quite in the dumps, and ashamed of letting the extractor off so easy this time; they just managed to sticky him all over, and that was about all. But I assure them that it is no fault of theirs, and that they will do better next time. Sixteen hives gave 150 lbs., 90 lbs. being in the shape of good sections; and all the hives, with two exceptions, have stores of their own to last them till spring.—HIVE.

WINTERING BEES.

[1868.] On reading some of your back numbers some time since, I was struck with a remark by one of your experienced correspondents that he had known many cases of hives wintering remarkably well on a fairly large number of frames without any contraction of the hive. Now, this struck me as being in accordance with nature, and I reflected that bees in their natural state would so winter. What is a more general remark to hear than that straw skeps winter better than bar-frame hives? They (the straw skeps) cannot be contracted; and, given a reasonably strong and healthy hive, I do not see that there can be any theoretical reason that a bar-frame hive should be treated differently. An instance has recently come under my observation which confirms me in this opinion. A friend of mine being overcrowded had sent a hive or two to some little distance during the summer, and had neglected to fetch or look at them in the autumn. When they were brought back in the spring matters were found to be in the following state:—The crate of sections (which were half filled) had been left on, and the stocks were extremely strong. Other hives at home, which had been nursed, contracted, fed, and fadded after, not being able to 'hold a candle to them.' What could be the reason of this but the following:—1. The bees had been allowed to keep a proper quantity of food. 2. There had been plenty of room for them to breed in the spring. 3. There had been access *over the frames* to the stores, thus preventing the possibility of what sometimes happens, viz., the bees dying off with plenty of stores in the hive. 4. There was a sufficient space left to give ventilation.

The deductions I draw from these facts are:—(*a.*) It is advisable to leave a strong, healthy stock with plenty of room. (*b.*) If the doubling system is practised, for which purpose a bar-frame hive is most suitable, the whole of the bottom hive should be given to the bees to winter on. (*c.*) If much honey has been taken the hives should be fed up in autumn to a good weight.

I have also come to the conclusion that the fact of free access over the frames is most important to the welfare of the bees, and purpose this next winter to use a board sufficiently large to cover the frames, and fitted with a strip all around a quarter of an inch thick, to give a bee-space. I shall cut a hole in the centre for the purpose of a feeder, or for candy-cake feeding, if necessary, and think that it will make a warm and compact covering, of course, with the assistance of quilts, old carpet, and other suitable material. Those who use a honey-board with a bee-space over the frames will, of course, have just the thing for the purpose. The excluder-zinc will be most suitable for giving access to the feeder, or candy-cake. The only disadvantage I can see is that such an arrangement would necessitate a total uncovering of the top of the frames whenever an examination was made. I think this, however, might have the advantage of preventing over-manipulation. There is no doubt that much harm is done by unnecessarily disturbing the bees in winter, and in summer as well.

It strikes me too, that a bar-frame hive is much the best for all ordinary purposes. It can most conveniently be used for doubling purposes, if extracted honey is the object. It can, with equal facility, be used for sections, being just the size to take twenty-one section crates. Any number of crates can be piled on each other by using ekes. The body box (even with double walls) can be constructed so that they are exactly square, thus allowing the bars to be either parallel or at right angles (I am always puzzled to distinguish which is which). In fact, I do not see that there is any advantage that can be reaped from any other description of hive that cannot be obtained from bar-frame ones. I have recently made a couple of them, and I am so pleased with them that I think I shall use no other size in the future.

One other point as to wintering has struck me as being worthy of consideration. No doubt in many cases it has been necessary to feed very late this year, and there is a corresponding danger of dysentery and wet hives in consequence. The point that struck me is that these dangers will, in a great measure, be avoided if a good *dry* cake of candy is put over the frames of such hives as are subject to the danger I have mentioned. The surplus moisture would be absorbed in the sugar, and the bees enabled by this means to consume it. Further than this, the use of these cakes of candy is equivalent to any device that I have heard of for providing a winter passage over the frames. For this reason it is advisable to use them in *all* cases, but most especially in those I have alluded to, of late feeding and unsealed food.—H. P. D.

WINTERING BEES.

[1867.] It is rather strange that we have treated the 'insect' (the honey bee) in just the diametrically opposite way to the natural life of other insects. Other insects *do* hibernate either by finding out a place of nearly *even* temperature near to the freezing point, or on a place where they really freeze, and where they can be kept frozen for months. When Nordenkjold some years ago doubled the North Cape, a country without human beings, and without woods, his company landed there, and the entomologist saw plenty of bees—*Apis mellifica*. How is it possible for these bees to winter there, and not hibernate? Certainly they are not packed in chaff. Three years ago, in a severe winter of long duration (six and a half months), the thermometer for weeks showing 30° C., a reverend gentleman in Werenland (here in Sweden) had a swarm of bees in a single-walled hive of one-inch board. This and some skeps were in the care of a cottager far away, and he forgot to winter those bees until it was too late. Fortunately the entrance was very wide. The skeps, however, as usual, were covered with straw caps, and *small* entrances, further diminished by the bees propolising them. These bees died, but in the unprotected one-inch board hive they came out in the spring in very good condition.

I have used your (the Cowan) hive for years. When the entrance occupies the whole front of the inner hive, generally only ⅜ in. by 8 in., it is a very good hive, but previously to this alteration I was not successful.

In the *British Bee Journal* some twelve years back the Carr-Stewarton hive was very much praised. In hives convenient to handle, as well for the bees (these not being disturbed) as for the bee-keeper, you will always get the greatest honey crop, all other conditions being equal. Much troubling the bees is *loss of honey*. I don't care much for sections (they will not pay here, fetching scarcely any price), but shallow frames are always as good when forcing bees to supers provided with frames for extracting. I have used these shallow frames for years. I am satisfied deeper ones are preferable for bees to winter upon. You are quite right when you tell and speak of the necessary conditions for successful wintering being, plenty of bees, plenty of good food, plenty of ventilation without draught, and good protection. I, for my part, do not care if it is *light* or heather honey; it does not matter, so far as my experience goes, so long as the honey is capped and the stores sufficient. But, above all, successful wintering depends on *plenty of ventilation*: and in using the shallow frames it is *easier* to ventilate than in hives with deeper frames, and to be sure *plenty* of fresh air is indispensable.

In November 1883 a bee-keeper of the *old style* living here at 60° N. latitude lost by theft one of his hives (skeps). In the month of March his daughter was going to the pasture ground in the neighbourhood, intending to gather some sticks for burning, when she chanced to tread upon something, and upon examining it she found it was the stolen skep *covered* up *with snow* for at least three months. The skep was lying bottomless and bottom upwards, full of snow. She lifted it up, got the snow out, and carried the skep home, when it was found the combs were broken, most of them taken away as well as the honey, but still there remained a cluster of *living bees*. The proprietor, not knowing what to do with the bees (being old-fashioned, as I have told you) killed them, although when entering the warm room they were very lively. He was not at all interested to find out if the queen was with them, but certainly she was, for if not I don't think they would have lived for so long a time, especially after having been robbed and so carelessly treated. Well, after that, what is one to think about McFadden and the freezing theory, hibernation, &c.?—Hy. STÅLHAMMAR, *Gottenberg*.

BEE-KEEPING IN NATAL.

[1868.] Enclosed I forward you specimen of a wild flower growing in great profusion here, and is the best honey-producing plant that I have yet been able to find in the vicinity of Durban. I think it flowers only about once in three years, and has been during the last season growing in enormous quantities, it having been the finest honey season in Natal for many years. If you will, kindly give me name of species through *B.B.J.* I have about thirty-five colonies, and have done very well with them the last season, taking as much at 60 lbs. from a hive in about five weeks, it being extracted honey, as sections are rather a luxury out here in this part of the world. I have had a few hundred very well filled, and for which I had to pay 3*l.* 10*s.* per 1000 for the ordinary $4\frac{1}{4} \times 4\frac{1}{4} \times 2$ sections, so that there was far more to be made out of extracting than sections at that price. I am now getting some direct from England, so that this coming season I shall work chiefly for section honey. English bee-keeping is a great failure, I see by *B.J.*, this season. The wet is a thing we are never troubled with out here; three days' continuous rain is the longest we ever get. Our rainy season has just set in, and we generally get a good downpour in a few hours by the style it rains here. I take a great pleasure in the perusal of *Bee Journal*. Practical experience and notes from *Journal* are all we get here, as we can get no one here that can give any practical lessons in bee-keeping. We have a far better, or rather easier, field for bee-keeping than either England or America, as we have to make no special preparations for wintering. An ordinary single-walled hive is all that is necessary, as our temperature is never very low, never any frost; bees able to fly every day in the year, rainy days excepted.—D. J. SPENCER, *Durban, Port Natal*.

[We are unable to determine the identity of the flower enclosed, as the small portion of inflorescence is insufficient for its botanical characters to be determined with precision. It, however, belongs to the natural order, *Labiatæ*, an order of plants to which many of our best honey-secreting plants belong, viz., catmint, horehound, wild sage, thyme, marjoram, motherwort, rosemary, &c. Could not our correspondent forward a small packet of seeds, in order that its properties as a bee-flower may be tested in this country?—ED.]

THE QUALITY OF BORGUE HONEY.

[1869.] With all due respect to the gentleman named in the communication of 'A. McN.' which appeared on page 498, I must demur to the assertion that 'A Renfrewshire Bee-keeper' has done more to promote successful bee-culture than any other gentleman in Scotland. What about the veterans, W. Raitt, of Blairgowrie, W. Thompson, of Blantyre, the late James Anderson, of Dalry, and W. McNally, of Glenluce, and a host of others who have done yeoman service in keeping up the good name of the country they belong to, both as practical bee-masters and prize-winners at competitions throughout the kingdom? 'A. R. B.' has, no doubt, done good service to the cause of bee-keeping, and we are pleased to have a grateful remembrance of his services to the good cause, but there are others now who grasp the reins of progress so far as Scotland is concerned.

Now to the main point, anent the prevalent delusion that Borgue honey is superior to other districts of Scotland. As a honey-dealer and one that has handled honey produced from all parts of the globe, I am in a position to refute the statement that honey raised in the district of Borgue has any peculiarities from that raised in other parts of Scotland, in fact, it is behind some of our honey-producing localities both in flavour and consistency. But to make a long story short, if 'A. McN.' will forward to you, Mr. Editor, a sample of Borgue honey, I will send samples from three other districts in Scotland and will ask you to kindly submit these samples—without pointing out any particular sample—to one or two of our best honey judges in England, whose decision I shall accept as final in giving their award: such a test will, in my opinion, settle the point as to the claim of Borgue honey being superior to any other in Scotland.

I enclose my card and shall be pleased to hear, Mr. Editor, if you will kindly undertake the duty of submitting the samples of honey to competent judges. If 'A. McN.' does not accept of this as a fair offer and challenge let us hear no more of the craze of Borgue honey being superior to that produced within a radius of from five to fifty miles from the second city in the empire.—SAINT MUNGO.

[We consider it would be preferable if the samples of honey were submitted to some of the experienced Scotch bee-keepers named in your letter. Southern palates do not always appreciate northern honey. We remember at the dinner at South Kensington that the heather honey liberally given away on the occasion by a Scotch bee-master did not please the palates of some English bee-keepers present. But should our correspondent find a difficulty in accepting our suggestion, we will with pleasure submit the samples to competent judges.—ED.]

Echoes from the Hives.

South Cornwall, Nov. 2nd.—Never before in the memory of bee-keepers—who really keep their bees and do not leave their bees to keep themselves—has a season ended as this has done. Lamentations are general. To be more particular, I may say that, on going west a few days ago, I learned that one of our members, who three years ago produced 16 cwt. of honey, had lost half his hives; while another is reduced to a stock of hybrids (*cæteris paribus*, in favour of foreigners). In many cottage gardens bees will be extinct. A little feeding is done (worse than useless), but where enthusiasm is lacking, time, and trouble, and expense, are begrudged. It is not so with all, and those who feed adequately now will deserve their reward next year. Having been absent from home, I began my work late, but with the help of some old stores, and after uniting, I hope it will be satisfactory.—C. R. S.

3 *Shakespeare Street, Stratford-on-Avon, Nov. 3rd.*—Please accept my *thanks* for the help you have given me in my six years of bee-keeping. I have taken 3000 lbs. of comb-honey in four years. I now count fifty-eight stocks, forty of them are stocks made of driven bees taken in five years. I have sold, or should have had many more. No finished sections this year. Seven hundredweight of sugar, made into 1000 lbs. of syrup, carried in cans to my allotment garden, one-third of a mile, has been my evening's work last month. Sir, you will say, *Nil desperandum.*—T. B.

Southbrook, Great Ayton, Nov. 3rd.—I am sorry to say this year has been a great failure every way. For my own part I have got no honey, and am feeding all my stocks.—JOHN DIXON.

The School, Grampound Road, Cornwall, Nov. 3rd.—My honey crop this year has turned out to be a complete failure, and worse than that, I have to feed them for the winter.—A. HUGHES.

Brondesbury, November 5th.—The past season, though bad, has not been so bad as last year in this locality. The fruit-blossoms yielded a good crop, and though the clover failed the limes yielded a fair quantity of honey. Last year the limes failed also. A neighbour took forty sections from one hive, and one of my hives yielded thirty-six sections, although I lost a swarm from it. At the end of May this hive had forty-two sections, nearly all more or less sealed, but the bees used most of them up before the limes came out. In September there was another honey-flow, the bees coming home covered with white. Of this they stored in the frames about eight pounds a hive. I observe that hardly any pollen has been stored, and it will probably run short in the spring.—T. F. L.

North Wales.—I have only been able to take about 3 lbs. of honey this year from one hive (Baker's A I), from which I have had a swarm and cast, the latter early in July, and one swarm from a straw skep. I have been much troubled with wasps, but have not seen any enter the skeps and frame-hive with swarm, only the two old stocks, but they have been quickly bowled over by the bees—in about two minutes.

NOTICES TO CORRESPONDENTS & INQUIRERS

W. STEVENS.—*Felt Quilts.*—The quilts you propose to use in two or three layers will allow the necessary ventilation; it should not be damp if the roof is waterproof and there is a hole for ventilation. You will find this sufficient for ventilation, more especially if the entrance be open to nearly full width. Take care not to have it too high, or it will allow the rain to enter. Eight inches by three-eighths of an inch is a good size.

NORTH WALES.—*Sugar Cake.*—This may be given in the way you suggest, but the more excellent way would be on the top of the frames above the cluster.

W. S.—*Glass Sections.*—The glass sections referred to were exhibited at the Conversazione of the B. B. K. A. held in June last, but we have heard nothing of the exhibitor since that time. We purpose to place ourselves in communication with him.

D. H. D.—The book mentioned is sufficiently rare to warrant you in giving the price required, but its rarity, rather than the information it would afford, is its recommendation.

B. M. J.—1. *Earliest Time to begin Stimulative Feeding.*—Beginning of March if the weather is warm. For pollen-feeding as soon as crocuses bloom. 2. *Time Drones ought to be Flying.*—Towards the end of April. 3. *Increase of Colonies without diminishing Honey-yield.*—Directly any increase in stocks takes place the honey-yield in proportion diminishes. An increase from six to nine would be a very fair one. 4. *Increase of Colonies without providing Queens to Parent Stocks.*—A reduction of about ten per cent in

honey-yield. 5. *When can Queen-rearing be started?*—As soon as drones are flying. 6. *Probability of pure Fertilisation of Queens.*—In this country the probability of pure fertilisation by selected drones is very remote, unless the drones are raised before others are so in the same district of at least four miles in extent. There are some isolated places where few bees are kept that true fertilisation can be fairly well assured, but these are quite the exception.

J. M. C.—*Queen mated.*—This queen, being in tolerably fresh condition, and therefore a fairly good subject for dissection, has been examined without the discovery of any signs of injury or malformation. The spermatheca seemed in normal condition, and was found to contain innumerable spermatozoa in a healthy state, so that your query as to whether she had been mated can be answered, without hesitation, in the affirmative. The tracheal system appeared also to be healthy, but the appearance of the other contents of the abdomen was that of emaciation: the ovaries were greatly atrophied and of a much darker colour than is usually the case in a healthy and fresh specimen, the comparatively few ova which they contained being in a condition suggestive of decomposition or disintegration, giving us the impression that the insect must have been both old and suffering from innutrition.

C. R. S.—*Singular Deposit in Cells.*—The use to which the bees have put the cells is certainly novel. The pieces of comb are well worthy of preservation as curiosities. The composition appears to be a mixture of wax and propolis. But we are lost in conjecture as to the intent of the bees in their deposition.

Correction.—P. 535, col. 1, line 30 from bottom, for 14"-16" read 11½.

Business Directory.

HIVES AND OTHER APPLIANCES.

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THE
BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

LANGSTROTH FUND.

MY DEAR MR. COWAN,

Yours of the 5th inst., with 23*l.* 5*s.* 6*d.* for the Langstroth Fund, is received. It is not necessary that I should offer any words of thanks to you and your countrymen for your aid in this worthy work, for the reward comes with the doing; yet I would do violence to my own feelings did I not express to you my deep feeling of gratitude that God has prompted you to this act. I am sure I know the bee-keepers of America well enough to say that I am speaking for them when I say, 'Thank you, thank you.' Surely such things bring us nearer together. The ocean is not quite so wide as it was. The bond of friendly feeling between the two countries grows stronger each day; and if I were ever to stray so far from these 'western wilds' as to find myself on 'Albion's green isle,' I am quite certain I could sing 'God save the Queen!' as heartily as any of you.

Most cordially yours,

Marengo, October 24th. C. C. MILLER.

SIMMINS' BEE COMPANY, LIMITED,

IN LIQUIDATION.

We very much regret that the Directors of the above Company, after painfully toiling through a very short existence, have found themselves unable to carry on the business entrusted to them throughout another season, and that they are desirous of being relieved from the responsibility of further representing the interests of the shareholders. They have, therefore, come to the determination of winding up the Company voluntarily.

In the Report issued by the Directors, a copy of which has been forwarded to us, the circumstances which have brought about the above untoward result are stated to have been,—(1), Insufficient Capital. Only about 200 shares have been applied for and allotted, and consequently from the commencement of the undertaking the endeavours of the Directors have been hampered and frustrated by the small amount of capital at their disposal. (2.) The Lowfield Apiary. The hopes expected to be derived from the working the business of this apiary have, from various specified causes which it is not desirable to ventilate in our columns, proved delusive. (3.) Foul Brood. The difficulties of the Company have been much complicated, and the expected business considerably reduced, by a very severe epidemic of foul brood in the Lowfield apiary. (4.) The late Bad Season. The abnormally cold season has seriously diminished the business of the Company, and disastrously affected one of the specialties of the Rottingdean branch, namely, queen-rearing. For many weeks it was totally impossible to get any queens fertilised, and the queens raised had to be destroyed, and the work all to be gone over again in hopes of better weather. The brighter weather never arrived; the destruction had to be repeated several times; and besides the trouble and expense this occasioned, the applicants for queens became wearied out by the delay, demanded the return of their remittances, and in many instances withdrew their support.

The honey yield, too, has, like that of the majority of bee-keepers, been extremely small. The Report, however, states that, 'notwithstanding all the adverse circumstances, the business done by the Company has amounted to 500*l.*, clearly proving that, if the season had been good, and the Company had been formed in time to take full advantage of it, a very different complexion would have been put upon the report they are now unfortunately compelled to make.'

The Directors consider their failure is due to causes beyond their control, and they deeply regret that their conjoint efforts have not been rewarded with success.

The Report concludes with the amount of the liabilities and assets of the Company.

At a meeting which was held at Page's Restaurant, St. James's Street, Brighton, on November 3rd, the following resolutions were passed:—

'That it has been proved to the satisfaction of the Meeting that the Company cannot by reason of its liabilities continue its business, and that it is advisable to wind up the same voluntarily.'

'That Mr. William Martin Graham, of Latymer Lodge, Church Street, Lower Edmonton, in the County of Middlesex, be appointed Liquidator.'

BEE-KEEPERS' VOCABULARY;

Or, Glossary of Technical and Scientific Words used in Works upon Bee-keeping.

Bee-skip. *n.*—A bee-hive. (West.)

Bee-space. *n.* The largest space through which bees may pass freely and in which they are least liable to build brace combs. It is usually $\frac{1}{4}$ to barely $\frac{3}{8}$ of an inch.

Bee-stabber.—An insect found in the Southern States of America (*Euthyrhynchus Floridanus*) which pierces the bee and sucks its juices.

Bee-stall. *n.* (*A.-Sax. stelan*, to place.)—A bee-hive. (Provincial and archaic.)

Bee-stand. *n.* (*Sax., old Sax.* and *Goth. standan.*)—A bench, framework, or other support on which a hive stands; the place occupied by a hive or hives.

Bee-stock. *n.*—Bees from the time of hiving them to Michaelmas are usually called *swarms*, after that time they are denominated *stocks*; and this term includes bees, combs, and the contents of the hives, but not the hives themselves.

Bee-tent. *n.* (*L. tentorium*, from *tendere*, to stretch.)—An enclosure of fine black netting, within which manipulations with live bees take place in public, and lectures are given by experts: in the outer circle enclosed by canvas the audience witness the manipulations without danger of being stung: tent of netting to cover hive and bee-keeper during manipulation, to guard against robber bees from other hives.

Bee-trap. *n.* (*Sax. trappe, trap.*) A device arranged in such a way that the bees can readily leave a hive or super, but are not able to return.

Bee-tree. *n.*—A tree in which bees have taken up their residence.

Bee-veil. *n* (*L. velum*, from *velāre*, to cover.)—Veil made of netting to cover the face whilst working with bees, to avoid being stung.

Beeves. *n. pl.*—A corruption of bee-hives. (Mid-Sussex.)

Bee-worm. *n.* See *Bee-maggot.*

Bee-yard. *n.* See *Bee-fold* and *Bee-garden.*

Bees-play. The flight of young bees when they first leave and hover about in front of the hive: the first flight of bees after confinement or change of locality.

Bees-wax. *n.*—A secretion of the wax-glands passing through the disks situated on the ventral abdominal plates of the worker to the wax-pockets. It is worked up by the bees, made plastic with saliva, and used for building their combs.

Bee-wine. *n*—Nectar of flowers. (Provincial.)

Bell-bird. *n.*—A species of Australian honey-eater (*Myzantha melanophrys*) whose note resembles the tinkling of a small bell.

Bell-glass. *n.* See *Bee-glass.*

Bellows-smoker. *n.* A small bellows attached to a tin cylinder charged with smouldering fuel, through which, air being forced, a dense volume of smoke is made to issue from the nozzle.

Beming. *vbl. sb., obs.* (*M. E.* and *Scotch*, Bemyng.)—Humming of bees; buzzing.

Bevel. *sb.* (*Fr. Biveau.*) A slope from the right angle; an obtuse angle; an instrument for setting off angles.

Bevel. *v.*—To cut away or otherwise bring to a slope.

GLEANINGS.

In the *American Bee Journal*, G. Wendelken says he prefers sulphuric to carbolic acid for the cure of foul brood. He says the sulphuric acid is mixed in the proportions of one part acid to 700 parts of syrup, and fed to the bees: and prefers this because it is easier, quicker, and cheaper. An ounce of sulphuric acid only costs from 5 to 10 cents, and the curative effect will go as far as the other acids do. In 1838 he cured his hives in Germany with little labour and thinks he can do so now, because there is no difference between foul brood in Germany and that in America.

In the *American Apiculturist*, respecting bees swarming out in spring G. W. Demaree says: Nearly all authors and writers, so far as I have seen, are wide of the mark as to the true cause of *swarming-out*. They tell us that young queens are lost at mating time by entering the wrong hive, and that the swarming-out *mania* is caused by 'dissatisfaction' with the condition of the hive, impending starvation, &c. Such facts are only *apparent*. In fact they are not facts at all. Swarming-out is the result of the absence of a sufficient quantity of young bees to keep company with the queen when a general flight of the workers takes place. Finding herself so nearly deserted, the queen becomes excited and takes wing with the workers, and the excited colony may return to their home, and they may not; in the latter contingency, it is a case of 'swarming-out.' A queen-and-drone guard placed at the entrance of the hive will prevent the excited queen from taking wing, and the cause is removed.

In the *American Bee Journal*, J. A. Clark, in speaking of foul brood, and referring to the statement made that it is not simply a disease of the brood but that it also affects the mature bees, both workers and queen, says: If this be so, they are very easily disposed of, for I have repeatedly cured the worst cases of foul brood by simply confining the bees without food for forty-eight hours, then putting them into a clean hive, and still more simply by brushing them from their infected combs into a clean hive, where they were obliged to build comb before brood could be reared. The plain inference is, that the contagion, whatever its nature, is contained in the honey, and that it is destroyed when the honey is digested. Possibly the digestion of the last particle of the honey does away with the bacilli so numerous in the vitals of bees and queens; but many will be inclined to doubt.

In the *Deutsche Illustrirte Bienenzeitung*, H. Fink says he finds in *Nützliche Blätter* an article on painting hives: In Germany they are painted various colours, dark green, brown, and blue. It has been found that green and blue had a bad influence on the honey-gathering. The only admissible colour is yellow, principally the ochre, all other colours have poisonous properties, injurious to the bees. Moreover, dark colours, such as green, blue, and others, absorb too many of the sun's rays and cause too great a difference in the temperature of the interior of the hives between day and night, which is injurious, more especially in spring. In summer dark colours attract too much heat and cause the bees to hang out and waste much time that would otherwise be employed in gathering. Colonies in yellow hives develop better, and have given larger returns than those in hives painted green. Dr. Dzierzon has made the observation that bees prefer the yellow colour. It is well known that bees have a great dislike for dark colours. Dark-coloured animals and persons in dark clothing are more liable to be stung. For this reason it is preferable for the bee-keeper to have light-coloured clothing. He also instances the development of bees in straw hives, which are also yellow.

According to the *Journal of the Royal Microscopical Society*, Prof. Plateau has continued his researches on the powers of vision of the frontal ocelli of adult insects. He gives an historical summary of past researches,

describes the manifold conditions of his own observations and experiments, submits tabulated results of his investigations of different forms, and formulates the following conclusions: (*a*) Diurnal winged insects, Hymenoptera, Diptera, and Lepidoptera, when blinded by covering the entire eyes with black, or by cutting all the optic nerves, rise to a great height in the air when liberated. (*b*) When the compound eyes are suppressed, but the frontal ocelli left, in Hymenoptera, Odonati, and Diptera, the insects behave exactly as if the ocelli also had been suppressed. When freed, they rise vertically as before. In a chamber lighted from one side, they behaved as if they were totally blind. (*c*) But if the frontal ocelli be alone suppressed, the above insects behave as if they had lost nothing. (*d*) In diurnal insects equipped with compound eyes, the ocelli count for almost nothing. They only afford the animals very feeble perceptions which they do not know how to use. The author concludes his memoir with the following suggestions, supported by a certain number of observed facts: (1.) Diurnal insects, in which all the eyes have been suppressed, still enjoy dermatoptic perceptions. (2.) They are almost reduced to the same limitations if the ocelli alone are left at their disposal. (3.) The dermatoptic perceptions are the primary cause of the ascending flight of liberated blinded insects. (4.) The frontal ocelli serve neither for the perception of movements in adjacent objects, nor for the perception of light in relatively obscure media. (5.) The simple eyes, which the author has shown to function in an imperfect fashion in most Myriopods, in many Arachnids, and in Caterpillars, have entirely lost their utility in the great majority of insects equipped with compound eyes.

THE POLLINATION AND PERFORATION OF FLOWERS.

(*Continued from p.* 508.)

Ants and Beetles Gathering Honey.—Ants are especially fond of saccharine matter, and are frequent visitors to flowers, but only for nectar. Their visits are entirely injurious to the plant. They frequently gnaw parts of the flowers and make irregular holes, thus gaining an entrance, or they use the perforations made by other insects.

Beetles, although not high in the scale of development, and certainly low as far as the adaptation of flowers and their pollination is concerned, show, in a few cases, some ingenuity in getting at nectar, as Muller found to be the case with *Cetonia Aurata*, which feeds on delicate parts of various flowers, is especially fond of nectar, and was found on the flowers of *Convallaria Polygonatum* eating its way from the top of the perianth to where the nectar is found at the base of the pistil, where it began to feed on the nectar-secreting gland until the wall of the ovary was reached, when it left the flower.

The acute observer Sprengel found that large numbers of the flowers of *Symphytum officinale* were perforated by one of the flower-beetles, and that ants used these perforations. Mr. B. M. Vaughan, who found the flowers of *Corydalis aurea* perforated at Madison, Wis., is of the opinion that these perforations were made by one of the flower-beetles.

Birds that Perforate Flowers.—It is not strange that birds should at times perforate flowers, since so many flowers are well adapted to pollination by them. Professor Trelease mentions that, according to Professor W. A. Henry, the humming-bird probably perforated the flowers of *Tecoma radicans*. Dr. Schneck and George Sprang have found these perforated, but the latter found ants gnawing through the corolla. In the Botanic Garden there was hardly a single fully-opened flower of this species which did not have a few slits.

Professor Beale reports that Mr. Hollingsworth found the flowers of fuchsia pierced through at the base of the calyx-tube and robbed of their nectar. Mr. Robertson writes me that he has seen the humming-bird force its bill into a flower-bud, so that the lobes of the corolla had not been separated, but merely cut through. Professor Beal watched carefully for two seasons the flowers of the Missouri currant, seeing large numbers of bees collecting nectar from holes made in the calyx-tube; yet, after careful examination, he has never seen honey-bees make these holes, but several times noticed the Baltimore oriole passing over the bushes and giving each of the fresh flowers a prick with the tip of its beak. No other bird having been seen doing this, he concluded that it is the work of the Baltimore oriole, while the honey-bee takes the gleanings after the oriole.

How Flowers are Perforated.—I have alluded to the manner in which *Xylocopa* makes perforations; I must also describe how this is done by *Bombus* and *Apis*:—

The mouth-parts are somewhat complex; the mandibles or upper jaws are developed for the purpose of biting; the maxillæ and labium are brought into use when the bee takes a liquid into its pharynx. The maxillæ are situated on each side of the labium, and consist of a flattened stipe at the base, then the rudimentary maxillary palpi, and from the stipe projects the triangular and deeply-grooved lacinia. When the maxillæ are brought close together, a tube is formed, which opens into the pharynx. The labium, or lower lip, consists of a central portion and two pairs of appendages, the paraglossæ and labial palpi. The central portion of the labium is divided into a basal portion, the mentum and a terminal portion, the ligula. 'The mentum is hinged to the submentum, which in turn is hinged to the maxillæ by two chitinous rods.' The labial palpi are deeply grooved, and when brought together form a tube.

In flying from flower to flower the insect carries its sucking apparatus stretched forward, so that it is enabled to put it directly into the flower. The mouth-parts of the bee are held in a similar way when the tender cellular tissue is pierced with the tips of its maxillæ. While many humble-bees are addicted to boring the tubes of corollas, they also resort to biting the tissues of the flowers by the aid of their mandibles.—L. H. Pammel, *Shaw School of Botany, St. Louis, Mo.*—(*American Bee Journal.*)

(*To be continued.*)

JOTTINGS BY AMATEUR EXPERT.

Mel sapit omnia.

More about Mr. Benton, the Carniolans, and a few other matters.

It seems likely that I shall be compelled to 'jot' about these matters for some time yet, as the subject grows apace, and I, for one, begin to think the readers of the *B. B. J.* will get a surfeit unless the Editor does use the 'scissors.'

I wrote a brief reply last week to Mr. Benton's long-winded epistles, in which he defames everybody who will not sing the praises of himself in particular, and the Carniolan bees in general; but it has gone to help fill the waste-paper basket in Tower Street. I hope that fact will be gratifying at least to Mr. Benton, who talks about 'irrevelant' matter and the need of the use of the 'scissors.'

Mr. Simmins comes to the rescue of Mr. Benton's queens, and helps to 'pitch into' 'A. E.' and Mr. Alley at the same time. Worse than all that, I have mortally offended 'Useful Hints,' who has taken an awful 'huff,' and says, 'You hit me hard that time, I won't play with you any more, "A.E." Why don't you fight the Editorials?

I will not attempt to reply fully to Mr. Benton and

Mr. Simmins. I should require a whole special number of the *B. B. J.* if I did. It is useless to go all over the world and introduce outsiders and their motives into what resolves itself into a very simple question. 'Are Carniolans more banded than they used to be, and are the bees sold to us as Carniolans the true bees found in the province from which they take their name: and, if not, what cross has produced the breed now being sold as Carniolans?'

As to Mr. Benton, I shall take no further notice of his communications unless he modifies his abuse of others, who are equally as virtuous as himself. Mr. Howes praises his queens, let him speak as he finds by all means; I hope Mr. Benton will not sell one really good queen the less on account of anything I might have said, or may say, in this matter. Several have written me 'facts,' asking me to abuse Mr. Benton's queens, and giving their experiences of queens that have not turned out satisfactory. To such I say, 'Throw your own stones.' Mr. Benton says he wishes all the truth to be told, so by all means tell it out.

Mr. Simmins was fully justified in praising Mr. Benton and his queens if he has always found them satisfactory. His abuse of Mr. Alley is gratuitous and uncalled-for from him. He should have allowed Mr. Benton to fight Mr. Alley, who is probably better informed about what bees are to be found in the States than Mr. Simmins; consequently, the latter gentleman is scarcely justified in talking about Mr. Alley making 'bare assertions, prompted by prejudice.' Is Mr. Simmins free from prejudice in Mr. Benton's favour as well as against Mr. Alley? Mr. Alley has ventured to give his opinion of some of Mr. Simmins' 'theories' in language more expressive than refined perhaps, while Mr. Benton's puff of Mr. Simmins' latest book is in the present number of the *B.B.J.* It is only natural we should separate our friends as sheep and goats. Mr. Alley, I may say, claims to have perfect control over his drones, so that he can keep any or all of them in confinement when they would be flying. How far he succeeds I cannot say, but he does claim, by so doing, to ensure pure fertilisation of his queens, even though he may have Italians and Syrians in the same yard. Future numbers of *Api* will be prime reading for both Mr. Simmins and Mr. Benton. As to myself Mr. Simmins is only paying off an old score.

But 'Useful Hints' is the saddest part of the whole business; he has caused me to sigh, not about myself but about him. He has put me in 'Coventry' because I talked about Nottingham. 'T. H.' freely criticises us small fry himself, and sometimes quotes Latin at us. We take it from him in good part because of what he is and has been to us. Moreover, he was aware that a lot of gossip and chaff had gone the round of bee-men because 'a less experienced judge, at a provincial show, did reverse the decision of three judges more experienced and capable, made at a more important show:' consequently, his Latin thunderbolt hurled at poor me came with questionable taste, and, as far as myself was concerned, fell very harmless. But enough: I have no wish to cause him pain, he being years my senior: from henceforth I promise to leave him in peace. But he must refrain from criticism himself if he is so thin-skinned himself when the shaft is turned on him. The Editor and Sub-Editor must in future keep a strict watch on their Editorials, as I am anxious to show I am not afraid to attack even them.

Now let us cross 'the pond.' While we are stinging each other in this fashion, our friends over yonder have been holding a big Convention at Columbus, Ohio. Mr. E. Secor, the bee-men's *Laureate*, has composed three 'bee-poems,' and Dr. Miller has set them to music; consequently, they sing these hymns in the meetings as Cromwell's 'Ironsides' sang when on the march. We shall have to get a piano at Jermyn Street for the 'Annual,' so that we too may have a harmony. Would it not be a strong inducement for more to attend? You will find the music and words in *Gleanings* and the *A.B.J.*

Talking about the *A. B. J.* reminds me Friend Newman has been giving us a poke in the ribs over *adulteration*. He finds 'C. Lyle patented a mixture in England (patent No. 8863) of grape sugar, fruit sugar, and glucose (dextrose, levulose, and glucose), with the addition of fruit essence, and thinks this compound is equal to any natural honey.' Mr. Newman wishes to know what we know about it, or if it is only a 'joke,' as 'adulterated bee farms' in America that we are so fond of talking about are only a joke. Perhaps Mr. Hooker will look up the patent when he next goes to the Patent Office. As to the stuff, I do not know if any is made from Lyle's prescription, but I do know that all our grocers sell what they call 'honey syrup' at fivepence per pound. It is light-coloured, like clover honey, does not granulate, is evidently flavoured with some essence, and is presentable both to the eye and the palate. I cannot find that any one buys it for 'honey,' but perfectly understands it is a manufactured article, consequently no harm is done: and that is altogether a different matter from the bogus honey put up by purveyors and sold as the product of the bee at more than double the price. People who buy this 'syrup' will not go to the expense of honey.

Our Berkshire friends, in selecting Mr. Seager specially from amongst all the other members of the Committee of the B. B. K. A. as the object of their remarks, are not a little ungenerous—unwittingly so, doubtless—but he amongst the whole number most deserves our commendation. He for two years has persistently advocated an alteration in the relationships of the affiliated Associations. He was the only one of the B. B. K. A. Committee who voted with us malcontents at the last Annual, and he has shown that he at least is prepared to try and solve the present state of difficulty and stagnation by introducing the subject at the last quarterly, thus showing that he at least is not in favour of clinging to the old fossilized modes which others see no need of altering.

To those who have enclosed such kind words to myself about my efforts to amuse and instruct them in these columns I tender my thanks, and will try to merit them. The Cornish and the Irish are especially demonstrative, the latter promising me 'a warm reception.' Mrs. 'A. E.' says that means dy—— and she shall forbid my visiting these bee-friends, because she wants me a little longer yet. But I say it means 'tatey cake, creaun, pilchards, and junket, a blue sky dotted with white clouds above, heather underfoot, greenness interspersed with golden gorse everywhere, warm 'words—words—words,' and warmer hearts. I shall pop in amongst you some day when you least expect me. Meanwhile there are still some seeds of *Echinops Sphærocephalus* left, so send on your envelopes; you are welcome.—AMATEUR EXPERT.

ASSOCIATIONS.

IRISH BEE-KEEPERS' ASSOCIATION.

The Committee met on the 6th inst. Present, Rev. R. Seymour (in the chair), Messrs. Read, Sproule, Gillies, and the Hon. Sec. The Hon. Sec. reported that, in accordance with the request of the Committee, he had applied to the Royal Dublin Society to give prizes at their next spring show for hives and other bee-keeping appliances, and had offered a contribution of 5*l.* towards the expenses from the funds of the Association. He submitted also a schedule of prizes which he had prepared.

The Association having promised to award Certificates

as prizes for specially meritorious bee-keeping appliances exhibited by their members at the Irish Exhibition in London, a certificate has been awarded to Messrs. Abbott Bros. for a specially meritorious collection of bee-keeping appliances, particular commendation having been given to the two hives 'Combination' and 'Universal.' The Rev. J. L. Seager kindly acted as judge.

WEST CUMBERLAND.

At a social meeting of the Harrington Industrial Co-operative Society held recently to present their late manager with a timepiece and writing-desk, the opportunity was taken of handing over to their present manager, Mr. Ebenezer McNally, a Certificate of Merit from the 'One and All' Co-operation Association, handsomely framed, and a cheque as prize money for the meritorious exhibit he made at the late Co-operative Festival in the Crystal Palace. The exhibit was in connexion with the apiarian section. During the past week the third annual Industrial and Fine Art Exhibition was held in connexion with St. John's Church Schools, Workington. The *West Cumberland Times* reports that among the special exhibits brought forward, and which have proved of the greatest interest, are collections from a distinguished bee-keeper in Harrington. These efforts and local notices are having wonderful influence in creating enthusiasm amongst many of our old 'bee men' here, and we expect, ere long, to be able to state that West Cumberland can boast of a strong and active Association.

SYRUP FOR BEE-FEEDING.—Having noticed a good deal of inquiry as to the best kind of sugar for syrup, may I state the result of my short experience? I made about 30 lbs. of syrup with 'Tate's cubes,' according to Cowan's recipe, minus the salicylic acid, and found a very large proportion recrystallised and formed a hard mass. Afterwards I got a 2-cwt. bag of 'Dutch crushed' sugar, and (following the same recipe) found very little became recrystallised or precipitated.—M. H. R., *West Sussex.*

STRANGE VISITANTS TO AN APIARY.—On Friday last, about 11.30, a stag and hounds in full run came through my apiary, which placed my hives in great danger of being upset; but, thanks, no harm came of it. On inquiry I found it was Her Majesty's stag-hounds.—FRANK S. FLETCHER, *Ottershaw, Chertsey, Surrey.*

USES OF HONEY.—In all ages honey has been used for many purposes. The Ancient Briton used it to make mead, and this drink continued to be much used hundreds of years after them. When malt liquors became popular, and when sugar was introduced, the uses of honey went down for a time, but of late years it has gone up again with a bound. Honey is largely used in the manufacture of chocolate creams and honey chocolate tablets. There is a delicious taste of the honey in these articles, but they are so judiciously blended with the other materials that they are not too sweet. Honey is also now largely used by the confectioners in the place of sugar in many kinds of lozenges, cough drops, and other sweetmeats. Glycerine and honey jujubes for the throat; corn and honey food; herbal tablets, &c., are only a few of the many things which might be mentioned. The toilet is not left out, as it is used in soap and dentifrice. Doctors use it very largely for many purposes, and many doctors are amongst our most successful bee-keepers, and thus the purity of their medicines may be guaranteed. There are many persons who are not allowed to use sugar at all; to these honey comes as a boon. It is a curious thing to note that even the angler now uses honey, and natural honey fish-bait is put down in the list of necessaries for the modern complete angler. What would old Izaak Walton say to this?—*Orange Judd Farmer.*

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.*' *All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements.)*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

HONEY IMPORTS.

The total value of honey imported into the United Kingdom during the month of October was 1604*l.*—JOHN COURROUX, *Statistical Office, H. M. Customs.*

MR. AMATEUR EXPERT.—CARNIOLANS.—ITALIANS.—EASTERN RACES.

HE HAS 'FITTED THE CAP' ON HIMSELF, AND—IT'S A BLACK ONE!

[1870.] I think Mr. 'Amateur Expert' must be able to write with both hands. And he never lets his right hand know of the good (or bad) things which the left hand does. Let us compare a little.

In the *British Bee Journal* for November 1st he says:—'The greatest recommendation for the Carniolans has been their gentleness, and I feared their temper would be ruined by cross-breeding; as all the other Eastern races, as well as the Italians, have all been "mongrelled" by the queen-breeders until it has become practically impossible to get a pure-bred queen of either race. But I wish to remark I did not blame Mr. Benton for doing it; it was he who "fitted on the cap."'

Turning to the *Journal* for September 6th, we find he says, on p. 435, that among the earlier importations of Carniolans were no 'banded' bees; and, he adds:—'None of these came from Mr. Benton. The past three years [he should have said six years] he [Benton] has given them more attention, and we have been getting them "banded." . . . Mr. Benton has told us that yellow bands sometimes appear amongst the native bees in Carniola. I hope he is not to blame for it, for I do find that some of the "mongrels" so marked are not as amiable as the earlier and truer marked Carniolans used to be, and it would be an infinite pity that such a good race of bees should be ruined by improvement (?).'

Until after this appeared I did not 'fit any cap on.' But it struck me when the above came out—and I think I would have shown myself mighty dull if I had not taken it—that Mr. 'Amateur Expert' had tried to shove the said 'cap' right down over my ears (no doubt he wanted it to come down over my eyes and mouth too), and then make the British bee-keeping public believe it fitted me! Far be it from my intention to obtrude my personality in any way, but I thought it high time I looked to the set of the thing and what sort of a figure I was cutting with such a monstrous 'cap' (charge) practically thrust upon me!

But, again, I must at Mr. 'Amateur Expert.' He says, September 6th, referring to banded Carniolans:—'Some of these "mongrels" so marked are *not as amiable,*' &c.; but November 1st, he states that for two seasons he has had access to some seventy stocks of 'banded' Carniolans, and, he adds, 'I will confess this freely about them, they were all *very amiable* in temper.' The italics are mine, and help, along with Mr. 'A. E.'s' 'confession,' to show how inconsistent he is. Why didn't you make a *full* 'confession' while you were at it? At least admit that looking over the fence at your neighbour's 'banded

Carniolans was hardly to be set up against several years' experience in Carniola itself, where I have been giving all my time to bee-manipulation, and where I have repeatedly seen in one spot a full thousand stocks brought together from different portions of the Province for pasturage, &c.

And while you are at it you might as well confess some other things, too; especially how little you know about 'its being impossible,' as you say November 1st, 'to get pure-bred queens of the Eastern and Italian races.' For fear you may not just like to 'tackle' this last subject lest you let out your want of knowledge of the whole thing, I will help you out a bit in the confession.

But, first, give us your authority for speaking of 'Carniolans and the *other* Eastern races' (*B.B.J.*, Nov. 1st, page 528). I supposed the term 'Eastern races' as applied to bees had by common consent, as it were, come to represent the yellow races of bees native to *Eastern* Mediterranean lands. What have the Carniolans to do with these, either in appearance or qualities? And is not Carniola separated from these Eastern lands by some *fifteen hundred miles of sea!* Why introduce such confusion by loose writing? Was it not enough that Prof. Cook, who likely never saw Greek nor 'Bonnat' (*Banat*, I suppose) bees, should classify these races as probably *varieties of the Egyptian?* No, Mr. 'Amateur Expert' had to put his foot in too.

Now about this 'mongrelising.' In no place in the world are the bees native to a country any purer than those of Cyprus. No one residing there thinks of importing bees. A priest there once wrote me to bring him some Italian queens from Italy. But I did not do so, and succeeded, after arriving in Cyprus, in convincing him of the folly of introducing a less diligent race of bees into his island. The Cyprian race is bred in its purity by all who keep bees there. The blood does not deteriorate in the least, for the weaker stocks invariably succumb to the terrible ravages of the wax-moth and the frightful onslaught of thousands of great hornets that fly about every apiary in late summer and in the autumn. Moreover, there is interchange of colonies enough within the island to freshen up the blood constantly. It must be borne in mind that Cyprus is some 140 miles long and 50 wide in places.

What I have said above of Cyprus applies, in the main, to the Syrian race also, as found in the Lebanon. But of course the region is less circumscribed the line of demarcation less definite. When, however, Mount Carmel has been passed, going southward, the bees are found to be the full Palestine type—smaller, full yellower (when well marked), and having much whiter fuzz on their bodies, also their habits are somewhat different. Cyprian, Tunisian, Carniolan, and Italian bees have been brought in small numbers into Palestine. The Italians were imported many years ago by a German. It is possible some of the blood may show itself still in his apiary or immediate vicinity. But beyond that one spot I am certain it has not reached. Only a few queens of the other races were introduced for purposes of observation and comparison, and their increase or spread was zealously prevented. I think the original queens have long since disappeared, and that the race of Palestine is left strictly pure. Of course it is not constant in its markings in all parts of Palestine, any more than is the Carniolan race in Carniola, or the Italian race in Italy. But the bees there, unless it be in the once partially Italianised apiary mentioned, are Palestines.

It is safe to assume that no foreign races of bees have been taken to Caucasia. The bee-keepers there are not progressive enough to take hold of the exportation of their own race as they might, to say nothing of attempting to get other sorts from distant lands to try.

I have heard that Italian bees have been taken to Cairo, Egypt. But to 'mongrelise' the bees of Egypt to any perceptible degree would bring us to an age as remote from the present as that of the Pharaohs. The Egyptian *fellah* does not take so kindly to 'furrin' innovations, especially when they come from Christian lands!

At two points in Italy the Italian bees have been modified by the introduction of Eastern (Cyp. or Syr.) blood—Milan and Monselice. Whether the influence of the Eastern blood has reached in Italy beyond the two apiaries into which it was first introduced I am unable to say. If other bees were near I presume it has. Elsewhere in Italy I do not believe the Italian bees are different from what they were when discovered, as it is said, by Capt. Baldenstein some forty-five years ago, except that, in certain apiaries, attention has been given to the selection of the best and brightest stock from which to breed, so that in these apiaries the race presents a more creditable appearance than the average stock of the country, which has remained practically the same.

Where, then, has all of this jumbled-up cross-breeding, this mongrelising, that Mr. 'Amateur Expert' so much deprecates, taken place? He cannot show that it has been carried on to any extent worth speaking of outside of Great Britain, Germany, and America. Certainly the cases in which it has occurred in the native lands of the races of bees mentioned here are so few, and their influence so insignificant over the bees of those countries, as to make it mere hair-splitting to cite them, except, of course, in case one wishes to show the character of a particular importation known to have come from such an apiary. For nearly nine years I have been passing from one of these lands to the other, and have, during this period, visited all of them, except Caucasia, not once simply, but *frequently*; and I cannot 'for the life of me,' conceive how any man, having the least conception of the state of affairs actually existing in the lands herein mentioned, can, as does Mr. 'Amateur Expert,' state that 'it has become practically impossible to get a pure-bred queen of either of these races' (of *any* of these races I suppose he means, since he makes the statement refer to 'Italians and the Eastern races'). And every one knows he is not obliged to rely upon me for all of these races, for surely there are professional queen-raisers in Carniola, Palestine, and Italy, who have as pure stocks as I am able to procure; indeed, I am oftentimes obliged to depend upon these very people myself for certain of my queens, for it is evident that I cannot be in two places at one time, *i.e.*, rearing queens in several different countries at once—only in so far as my 'better half' helps me out in this; but even then it wouldn't do to try dividing up into more than *two*. And I have never yet attempted to rear two races in their purity, *i.e.*, secure pure fertilisation of each in one country. Perhaps when the two little B.'s, that are now taking their first lessons in apiarian management, get bigger, we can conduct, simultaneously, practical operations in queen-rearing in four different countries: Cyprus, Austria (Carniola), Italy, and—who will tell what the other shall be? Perhaps far-off India, and in an apiary stocked with the famous *Apis dorsata!*—FRANK BENTON, *Prof. of Carniola, Austria.*

MR. BENTON AND CARNIOLANS.

[1871.] I endorse the remarks of Mr. Charles Howes in your issue of the 8th instant, and in fairness to Mr. Benton, who, I consider, has been unjustly treated by the remarks and unwarranted statements of 'Amateur Expert,' reflecting on that gentleman's honesty. I have much pleasure in stating that I have also received several Carniolan queens direct from Mr. Benton, Laibach, Carniola, and in every instance they were pure, prolific, gentle, and threw grey workers, giving me every satisfaction. Also a friend living near has spoken well of queens purchased from the same gentleman; and I trust others who have been equally well served will, in

common fairness to an absent man, record their testimony, and thus give credit to whom credit is due.—W. H. Baigent, *Southampton, November 10th.*

CARNIOLANS AND THEIR RAISERS.

[1872.] I have only just seen your issue of September 20th, and hasten to reply to the letter of Mr. Frank Benton, which concerns me somewhat. When I made my visit to Carniola, I saw that Mr. Dokoupil did not sufficiently appreciate the importance of keeping foreign races of bees away from the apiary where he raised the queens for export. I talked with him a good deal about it, and said that no one would deal with him while matters stood thus. I named it, too, in my article describing my journey. It was not until some time afterwards that I dealt with Mr. Dokoupil, and not until the most satisfactory assurances had been given me that all queens would be raised at places where there would be no chance of any admixture of foreign blood. I may say that Mr. Dokoupil has proved himself to be most satisfactory in this respect, and I have never had occasion to complain, or even cause for the slightest suspicion. His queens and their progeny have been all that could be desired, and I have had at one time over one hundred stocks in my apiary, all the progeny of queens supplied by him, and not one has shown any traces of yellow bands. Their quietness, prolificness, and general good qualities have been amply proved, and I may say that dozens of bee-keepers who have visited my apiary during the past two years (you, Mr. Editor, among others) will testify to the truth of the first two named qualities (gentleness and prolificness).

I will pass with the contempt it deserves Mr. Benton's ill-mannered remark about my condemnation of the Eastern races of bees, 'never having learned to manipulate them,' being quite prepared to be judged in this matter by our bee-keepers, to whom I have now been well known for the past few years. Mr. Benton's case must be a bad one when he has to resort to what I consider abuse.

I have now to deal with the second-grade queens. I have at times had a demand for low-priced queens, which demand, as a dealer, I have had to meet. I here state, most clearly and emphatically, that the only second-grade queens I ever imported were supplied to me by Mr. Benton himself, and that I ceased after last season to take any more from him on account of the poor quality and the general dissatisfaction they gave.

I think that this will close my own case, but as an attack has been made on Mr. Dokoupil, and as he does not read English, and will probably never know the charges that have been made against him, I feel that it is my duty to defend his cause.

Mr. Benton has directly charged him with dishonesty, also with making false statements. The latter charge I am able to disprove. Mr. Dokoupil did send me 160 queens in 1887, and I was perfectly satisfied with them, probably fifty to seventy being retained in my own apiary, and they were thus tested and found satisfactory. The statement, too, that Mr. Dokoupil has not been able to land more than a small percentage of his bees in America is also probably a false one, as I consider he is able to pack bees for shipment by mail quite equal to Mr. Benton. The most serious charge, however, that Benton makes against Dokoupil amounts practically to the obtaining of goods under false pretences—that is, receiving queens alive, and stating that they arrived dead.

In the first case, one queen only is sent; it is reported dead, and then it is insinuated that it arrived alive. Now, in this case Mr. Benton had a perfectly clear remedy. He should have demanded the return of the dead queen or the payment of the money. Nothing would have been more simple, and the case would have been cleared up. Why, too, did he continue to send to him fifteen queens in 1885, and twenty-nine in 1886, if previous dealings had not been satisfactory? It is a well-known fact that many of the queens from the East did not travel safely; and when I was at Munich in 1886 Mr. Benton himself informed me that had he known as much of packing bees for mailing purposes during the past two or three years as he then did (1886), he would have saved himself very serious loss. But now he has turned round and accused the receiver of the queens of fraud when the cause of death of queens might lay at his own door. The case is clearly one of trade rivalry between Benton and Dokoupil.—Thomas B. Blow (*of Welwyn, Herts*), *Watertown, Wis., U.S.A.*

COUNTY ASSOCIATIONS.

[1873.] With reference to Mr. A. D. Woodley's letter in last week's issue, I shall be much obliged if you will allow me to say, in justice to the other members of the Committee, that I must not be considered in this matter as 'representing the views of the Committee of the British B.K.A.' I do not even know the views of two-thirds of the members. I, and I only, am responsible for what I said. My object in opening the debate was to invite discussion, criticism, and correspondence on a subject that needs ventilating, and in due time I shall have something more to say on the subject; but meanwhile I have to thank Mr. Woodley for attacking me *in his own name*, instead of manipulating my speech as an 'Amateur Expert,' or sitting upon me as an 'Useful Hint.'—J. Lingen Seager, *The Grange, Stevenage, Nov. 12th.*

THE B. B. K. A. AND AFFILIATED ASSOCIATIONS.

[1874.] I feel quite sure that Mr. Seager did not intentionally mean to be 'impolite' to the county representative who first proposed the resolution *re* Wind or Show. There is no doubt that in the—shall I call it?—excitement of debate the first proposal was overlooked and a second one substituted.—W. B. Webster.

THE FUTURE OF BEE-KEEPERS' ASSOCIATIONS.

[1875.] I take it from what has passed as printed in your *Journal* during the past six or eight months that there is a desire amongst some who take an interest in the bee industry to improve the condition of the British and all other Associations connected with bee-keeping.

The sale of honey has unfortunately not been the *bête noir* this season; and now the British Honey Company has had its fling, and not answered the purpose it was formed for, can we do better than look to the wholesale Co-operative Societies to be the means of distributing all surplus honey? This is a question the Committee of any and every Bee Association might take up.

All parties I have come in contact with want to keep the British B.K.A. on its feet, and I think, though many will say Bee Associations will get on without the British as at present conducted, it would be to the benefit of all if the British was conducted on the lines of a large-minded central authority. Now, would it not tend in this direction if the Presidents of all affiliated Associations were asked to attend the next annual meeting of the British? Many of the Presidents take no interest in their County Associations; but if they were shown by attending a meeting of the British what a useful work can be done in the counties, their energies might be aroused; but I am quite aware the meeting would have to be businesslike, not similar to the last, viz., a lot put on the agenda paper and backed out of without

explanation, and in all probability the meeting would have to be adjourned, or another called for at a date when more of the county Presidents are in or near town.

For near three years I have been travelling each quarter 400 miles to meet the Committee of the British, who have been, to say the least, lax in their attendance, until at last, in October 1888, when important subjects are promised to be brought forward, there are three British Committeemen to meet the Representatives, and one of those unfortunately so deaf that when 10*l.* is offered to assist to make better prizes at a Royal Show, he gets up and says the British are too poor to listen to increased prizes. I have neither time nor money for a recurrence of such a scene, and if matters cannot be changed at the coming annual meeting, I will put my energies into another bee channel.

I make no mention of suggested alterations in rules of affiliation, as those are under consideration by a duly authorised sub-Committee.—Wm. Lees McClure, *The Lathams, Prescot, November 10th.*

[We regret that any personal affliction should interfere with the capabilities of any, more especially of those who give their services with an earnest desire to benefit their fellow-men, and we also regret that such affliction should have been made the subject of public comment. We are fully aware of the inconvenience experienced by our correspondent in journeying to and from town, and sincerely hope that his well-meant efforts to benefit bee-keeping will long continue to be in the interests of the B.B.K.A.—Ed.]

YORKSHIRE ASSOCIATION.—JUDGING.—SCHEDULES.

[1876.] I fail to gather from Mr. Seager's paper what benefit the North East of Yorkshire, for instance, derives from either its own or the British Association. I do not wish to bring my name forward, but I have been a member of both, and have often been asked, 'What are you doing?'—a very awkward question to answer. I am afraid very little; we get no literature, no expert ever visits us: and were it not for the *British Bee Journal* we would never know what is going on. I am not going to say a word against my friend, Mr. Grimshaw; he is full of life and energy, but one man can only do so much; and if we do not try to get some one else interested I am afraid we will die out as an Association.

Another thing I want to bring forward is the judging of hives at County Shows. If we get south-country judges, they may know the best sort of hives for the south, but do they know the best for a county like Yorkshire, where most of the hives are regularly shifted to the moors, and extractors are almost unknown? Schedules are also very faulty, and an exhibitor hardly knows what he is required to show. Excuse me, Mr. Editor, if I have said too much, but your valuable paper is the only way that I know that I can ventilate my views.—A Yorkshireman.

[We would refer our correspondent to Mr. Seager's remark, that the benefits derived from affiliation are more or less in accordance with the efficiency of the local Association itself. Under the present rules of affiliation (1), medals and certificates of more than the value of the affiliation fee are offered for competition at the local shows; (2), members of the local Associations exhibit at the shows of the Central Association at the reduced fees—we are informed, on good authority, that half the entries made at the Nottingham Exhibition were made under this head; (3), the literature published by the Central Society can be purchased at the ordinary trade rate, including certificate suitable for offering as prizes at village shows; and, lastly, but by no means least, there is the privilege of being affiliated with a Society which has for its object the extension of a home industry. We would advise our correspondent to give us his ideas as to the improvement he thinks might be effected in some practical shape.

It would require 'Atlantean shoulders' to bear the weight of an Association for a large, unwieldy county like Yorkshire. But it would prove a great alleviation of the burden borne by Mr. Grimshaw, and conduce to the promotion of the industry in which we are interested, if the county could be divided into districts; and we might suggest that our correspondent should put his shoulder to the wheel, and endeavour to establish a district Association in his locality; and, further, having a knowledge of his great capabilities as a bee-keeper, we might express a hope that he should take a personal interest in its conduct.—Ed.]

THE CHOICE OF A HIVE.

[1877.] On arriving in the United States twenty-five years ago, I had never seen shallow hives. In all those that I knew, the Lombard, the Radouan, and even the Debeauvoys, the combs were higher than they were broad. Also the first hives that I made very nearly resembled the Layens, reduced to eight or nine frames. As soon as I was able to translate a little English, with the help of a dictionary, I procured the *American Bee Journal*, then the *Mysteries of Bee-keeping* by Quinby. I bought this book first, instead of Langstroth's, because it only cost one dollar (four shillings) instead of two, for, by emptying my purse, giving even the lining, its old leather, and the pinchbeck clasp, it would have been impossible for me to find two dollars. Quinby seemed to me unreasonable with such a long frame as he had adopted. Like many other bee-keepers, before comparing another hive with my own, I had made my choice, and I boasted of what I then called my favourite hive. Nevertheless, Quinby obtained honey with his hive. They spoke of a harvest of twenty-two thousand pounds, which he had sold at one shilling and eight pence a pound in paper money. This was a fortune of which the idea alone turned my head. I then gave up my first favourite in order to try his hive.

Two observations had shown me the value of large hives. The friend with whom I stayed on arriving here had seven or eight hives, of which one was enormous, made of planks 60 centimetres high by 40 or 45 broad. The sap of the front plank having rotted, left an opening of 3 or 4 centimetres from the top to the bottom of the hive. The bees of this hive had survived, whilst those of all the others, which were smaller, had died, and had been replaced by swarms. I asked the age of the colony, and Mr. Charpentier's father-in-law, your subscriber, who had sold it, told me that it had existed at least twenty years.

One of my neighbours, whose hives were suspended on simple cross sleepers, not closed, the bottom of the boxes being without floor-boards, showed me one day combs that filled the space between the hives, and which contained honey and brood, the queen not having had enough room in the hive, this being, however, of an ordinary good size.

About the same time a bee-keeper called Jasper Hazen stated in the *Journal* that he was obtaining enormous returns by surrounding the brood-chamber with little boxes placed on the sides, at the back, and above. 'I must try that,' said I to myself. I had bought cheaply some second-hand carpenter's tools. For want of money I pulled up parts of the floor from the granary of the log-house in which we were living to get the boards that I wanted for this purpose. As that was not enough, considering the size of the hives, I bought at a very low price some hard deal planks, which had been sawn from a tree that had not been squared, and which I planed and replaned, sawed and resawed, over and over again to equalise the breadth of the planks in order to make frames of them. In short, I succeeded, although my

hard deal planks warped, became unnailed, lengthened or shortened more or less in proportion with the soft pine planks with which they were joined.

In spite of all this, however, I succeeded in making thirty-two hives, with Quinby frames, capable of holding, besides the eight frames of the Quinby hive, such as he described it, boxes on the sides and at the back, as Hazen advised, without counting the super. But I soon found that the bees preferred to put the honey above the brood. Then I filled the sides of the hive with frames, and I also placed three at the back, in all seventeen. This was too many; my fourteen frames in the front, even reduced to twelve by two division-boards, were also too many, and I therefore reduced the capacity of the hive to eleven frames.

However, I had bought an Italian queen for five dollars (£1.) I hesitated for some time before spending so much, but I hoped to rear queens and to recoup myself from the profit that I should make by them. My wife and I were going to live in a hut without doors or windows, in the middle of the woods, for five or six weeks in the summer, to pick berries off shrubs, called here blackberries, and which our son Camille was to sell in the market. I still see my wife's look when I took this sum in order to send him. She said nothing: she loved me too much to make the slightest objection, but I read by her eyes that she could have found plenty of ways of utilising so large a sum of money. My rearing of queens succeeded. My first sale of queens realised nineteen dollars. One day, the following year, a man, rather shabbily dressed, appeared and asked to see my Italian bees. Then he selected six or seven queens, which I gave him in small boxes. I still remember my wife's astonishment when I put into her hand the nineteen greenbacked dollars (they call greenback, in the United States, paper money, of which the back is green.) She could not believe her eyes. From that time I began not only to sell queens, but also colonies of Italian bees.

My reader will certainly think that I am a long way from my subject, however, it was this rearing of Italians that led me to compare the Quinby hive with that of Langstroth, in the way I had already compared it with my favourite hive, which had now taken the second place in my estimation. The Langstroth hive was very extensively used in the United States, and those who wished to purchase colonies of Italians wanted them in Langstroth hives, and I lost a good many sales. Then, in order to supply the demands of my customers, I made Langstroth hives.

It is well that the reader should know that the Quinby hives are nearly five centimetres higher and two or three broader than the Langstroth hives. The result of the comparison was in favour of the Quinby hive, and, although we have kept a certain number of Langstroths to satisfy the demands of customers our six apiaries are all furnished with Quinby hives.

As my readers will see, the comparison between these three kinds of hives was not made with one or two hives of each sort, but with at least fifty, placed on exactly the same footing as to pasturage and attention. It is the result of this comparison on a large scale, and during twenty years, that has made me so positive in the discussions which I have had, and which I regret to have still, on the size of the frames and the capacity of the hives, because for some years in the United States the inclination seems to be turning in favour of small hives. For some other reasons than those supported by facts, some bee-keepers, who have known how to win the public ear by fine phrases, condemn big hives, without even having tried them.

But truth, whatever effort is made to hide it, will in the end prevail; do we not see M. de Rauschenfels himself so opposed to the American hive, say, in the *Apiculture* of last March, that as the facts in favour of the horizontal hive with supers seem more conspicuous, it deserved serious consideration, that he was going to renew his experiments, and, that if the results were in its favour, he would enter, arms and baggage, into the American camp?

The differences in the returns between the three kinds of American hives which I have compared, were not as great as those which are reported between the Italian and German hives and mine; however, they are considerable, although they do not seem to be so great when honey is obtained in sections. We have verified them from the beginning, and ever since, without particularly occupying ourselves, we prove them every year. Our hives of each kind, when we have two sorts in the same apiary, are separated by a passage. Extracting begins from all of one kind. As the extractor becomes filled it is emptied by filling a tin bucket, the contents of which are emptied into a cask, on which a chalk mark is made for every bucketful, in order to give the person who has charge of the hives every fifth bucketful which is his share, because, on socialistic principles, we interest all those whom we employ in our success.

When one kind of hive is finished, the number of buckets it contains is counted, these weighing on an average twenty-five pounds, the total product is divided by the number of hives and the average per hive is obtained. The same is done for the second kind, in order to know which form has given the best result.

It was an article by Mr. Andreu, of Mahon, Minorca, in which he asks advice about the size of hives (*British Bee Journal*) which has induced me to publish my experiences, and which I invite him to repeat, begging him to give his results after comparatively extensive trials, and not on one or two colonies. Deliberate statements like those of Dr. Bianchetti, without comparisons to support them, are absolutely worthless. Unhappily they are not rare.—C. H. Dadant, *Revue Internationale d'Apiculture.*

INTRODUCING QUEENS BY SCENT.

[1878.] It is some three or four years since I wrote explaining this method, but apparently there was not a bee-keeper within the range of the *B. B. J.* who had the courage to try it, or, if they did, they never said whether it was a success or failure. Mr. Cheshire, in his second volume, mentions it only to condemn. The method I then described was to scent the bees and queen with sweetened water and oil of peppermint. Mr. Cheshire condemns this on account of wetting the queen. He may be right, but during these years I have seen nothing to convince me. A bee-keeper in this district, whose average honey yield is about the highest I know, pours sweetened water on his bees when examining them in spring. I have often done the same without any apparent evil.

Mr. 'A. E.,' in a recent issue of the *Journal*, brings up the subject in a somewhat different form, using camphor instead of mint, which I hope will draw the attention of bee-keepers to this golden method. I have not tried camphor, but any volatile scent will do. A feather dipped in No. 5 Carbolic and placed behind the dummy would do as well. With blacks I take out the one queen and put in the other at one operation, and never lost one. But, like Mr. 'A. E.,' I have this year been introducing Carniolans, and wished to take extra precautions, but by a simpler method than his, as follows:—In the evening I removed the reigning queen, if there was one, and scented the bees; removed the wooden lid from the Benton cage (there is a paper sealed on under the wooden lid), and placed it over the feed-hole in quilt, with air-holes between the frames, and covered well up. The following evening I placed an old veil over the cage, and tore off the paper, and allowed her to walk down.

Caution.—Foreign bees are apt to fly, so use an old

veil over cage, and do it in the evening after bees have stopped flying, and do not disturb for two days, and I expect you will be as successful as your humble servant and his neighbour. JAS. SADDLER, *Dorfar*.

JOTTINGS FOR OUR 'JOURNAL.'

[1879.] We have at last reached the end of the feeding campaign. This has been our first experience of such a large affair. In other bad seasons, in the years that lie behind, our apiary was of small dimensions to what it is now, and the feeding up of a few hives was a mere diversion, a nice change from the ordinary routine of business; but this season it has been a serious matter, not only on the head of expenses, but also of time in which to do the feeding. My feeders have been makeshifts, but have answered the purpose admirably. I made them with 2-lb. honey-jars and a square of tin or zinc cut three-eighths of an inch wider than the lip of the jars, and, with this turned down, it formed a cover that does not slip off when the jar of syrup is inverted; then, with a large number of holes punched or drilled in the metal cover, and inverted over a piece of board six or seven inches square with a two-inch hole in centre, the bees rapidly emptied the jars: and with a square of glass to cover the hole while filling the bottles I did not let a bee escape. The square of wood, the metal covers, and odd pieces of glass, can all be packed in a small box till wanted again, and the jars are ready for honey another season.

I was glad to see Mr. Burkitt's suggestions *re* Schedules (1824). I consider it merits consideration, and I would like to endorse his remarks as to exhibitors exhibiting collections of goods not of their own manufacture, also exhibiting the produce of the apiary when said produce has been purchased, not produced by themselves in their own apiary. If the thing is to be allowed, by all means let us have separate classes—one for dealers, the other for *bonâ fide* producers. Mr. McNally also refers to alterations in schedules in the large exhibits at honey shows. No doubt his suggestions are good, provided bee-keepers' associations had a good balance at the bank and could offer good money prizes for their larger exhibits; but a bee-keeper will want a pretty good prize to induce him to risk two railway journeys for his honey, one to, the other from, the show, and possibly the return journey has to be made in conjunction with indifferent packing, as we know by experience what a rush it is when the show is over to get the place clear. Mr. McNally's suggestion to limit the quantity staged to a certain weight would open up the class to a wider number of bee-keepers; but as regards the largest and best display of honey in any form (quality to be taken into consideration), I do not think, for the wider interests of bee-keeping, there should be any limit: the object of the Association is to get a large, fine display, that will command the attention of the public, and bring our industry to the notice of the millions.

In the classes for sections we in our Berks Association have tried to meet the case of small bee-keepers by providing a class in our annual shows limited to apiaries of three or four hives. A class could easily be inserted in schedules for exhibits of six sections or six bottles of honey (if funds allow), and reserved to lady bee-keepers or owners of one or two hives. This would in no wise prevent the said bee-keepers from competing in other classes if they had the quantity, yet at the same time it would form a reserved class for them if they could not muster the dozen sections or bottles of extracted. When I am sending to a show I always like the quantity stated in schedule that is to be staged (here I am speaking of the general classes), *vide* the schedule of the late Lancaster Show, which stated in rather ambiguous terms, viz., from 12 to 20 lbs. in both classes of section honey and extracted honey. Now, I think it would be far better if it stated the exact quantity, otherwise if two exhibits were of equal merit, one consisting of twelve and the other of eighteen or twenty pounds, would the judge decide by giving the first prize to the larger exhibit, and awarding a second to the exhibit of acknowledged equal merit? We know if the exhibits were equal in weight the result would be satisfactory to all parties concerned. The judge would cut the knot by awarding *equal first*, and the exhibitors would each be satisfied. I thoroughly endorse Mr. McNally's suggestions *re* classes for extracted honey, but regarding the last paragraph of his letter 1846, the cost of journey and carriage cuts both ways. When I have seen the schedules of the Dundee and Caledonian and other Scotch honey shows, I have wished the distance or rather the expense and risk, of transit was not so great, so that I could have entered the lists.

Recent numbers of the *Journal* have shown up the foreign races of bees in a by no means tempting light. When bee-keepers get a little more wool out of their eyes they will be able to recognise the merits of the naturalised English bee for the English climate. I notice Prof. Cook in a recent number of *Gleanings* states that the naturalised bee of America is the German bee. Why the German bee? He gives as the reason why he thinks so because the Indians call them the white man's flies. Now, with all due deference to the learned Professor, I must differ from him on that point. If that is the only reason he has to adduce that the American bees have been introduced from Germany, or, speaking more widely, from the Continent of Europe, some time since the discovery of America by Columbus, the American bee, the English bee, and the German bee may be identical in nearly every point,—so identical that writers may term them the common black bee; but I do not see that because there should be many points in common in the three races of bees that it should be received as conclusive evidence that they are the descendants of one ancestral colony; neither can I receive it as conclusive evidence of the introduction of the European bee into the great continent of America because of the remarks of the Indians (terming bees 'the white man's flies'). Possibly the 'white man' was the first to keep bees in America in a bee-gum for the profit of the honey and wax, the value of which he had acquired in the land of his birth as an article of food and utility, whether from the country of Albion or the 'Vaterland.' Now, having crossed the Atlantic and settled in the land of his adoption, what more natural thing than that he should, on finding a race of bees in this new land similar to those in the land of his birth, embark in a few hives, getting his first swarms from some hollow tree or crevice in the rock.

Now, this would probably happen wherever the enterprising emigrant settled in every state of the Union. As regards the introduction of English or German bees into America, one would expect to get some notice in public prints of such uncanny voyagers as bees amongst the emigrants; or if sent as ordinary cargo I should expect the captain of a vessel who had safely carried across the wide waste of waters and introduced to the New World such a grand fertilising agent as the *Apis mellifica*, would have chronicled the exploit, and that such notice would have been taken up and preserved to us by writers on bee matters during the past century or two.

THE ROYAL SHOW AT THE ROYAL BOROUGH.—My hope of any large show of honey was dispelled when I heard that the fixture was a fortnight earlier than usual. We dwellers in the royal counties know how difficult it is to get sections sealed by the longest day or midsummer, the usual date on which the royal counties' Society hold their show, and at which I have exhibited for several years past, so that we have experience to form our judgment on. If it had come at the same period as for several years past, we southerners intended 'going in

strong' in the honey classes, but the early date will prevent any large quantity of honey being staged, and the past short, meagre crop will have been consumed long ere the Royal Jubilee Show is held, so that instead of a grand exhibit worthy of the occasion, we shall (I predict) have the worst display of the products of the apiary we have had for many years. I trust the B.B.K.A. will not overlook the wax classes. Though not the first by any means, it ought in no wise to be forgotten that it is a product of the apiary. Our only hope lies in a genial spring and early summer in '89.—WOODLEIGH.

HELPED BY MR. COWAN'S BOOK.

[1880.] I now take for the first time the pleasure of writing a few lines to you respecting bee-keeping. I myself have kept bees about four years. I joined an Association the first year, thinking of getting a visit from the expert. After paying my contributions for two years, I thought it was time I had a visit from him, so I stopped my payments. This spring, after joining another Association, the expert of the old Association gave me a visit, wanting to know the reason I had stopped paying to his Association. I told him the reason was that his Association did not care how the members got along with the work so long as they got the money. Then he says, 'Don't you require anything doing?' 'No,' says I. 'I had to do myself with the help of Mr. Cowan's book for three years, I think I can manage myself now: thank you.' So I think it is quite time there was something done, as the Rev. J. L. Seager says in his paper, as I am situated on the borders of two counties, living in Warwickshire, and twenty yards from my door is Staffordshire, making it close on forty miles to the centre of one Association and twenty to the other.

I might just say when I started bee-keeping I began with one straw hive, which I fetched forty miles in the month of February, up to the knees in snow, getting it home all safe. From that hive I had an early swarm, which I put into a bought bar-frame hive. In twelve days after I had a second swarm, which I also put into a frame-hive of my own make. Before this time I had not handled a bee, and did not like them, so I thought myself very fortunate when I hived these two swarms without a sting. After this I had some condemned bees given me if I would drive them. This being my first attempt, I felt rather timid, but am happy to say I did drive them, and got them safe home without a hitch, put them into a bar-frame hive, and kept them all winter without any loss.

Last year I wintered eighteen hives without bee-passages, and no bees could turn out better, not losing a hive through the winter or spring. I am wintering on the same principle this winter, but am sorry to say they are wintering on sugar syrup instead of honey, and so far going on well. I have not taken any honey this season, and very few bee-keepers in this district have taken any, a great many having lost all their bees, and will do, for some of them will not feed. One old man told me he had kept bees over fifty years, they always had lived, and would do so again, when I told him to feed. Some say it will be cheaper to buy swarms than feed, but where are they going to get them from? for where I drove 150 hives last year I did not drive twenty this, and I don't believe there are any of this year's swarms alive in the district. I fitted a gentleman up last year with nineteen hives, putting two, and three, and four stocks in a hive. He has only nine left of them. I was at a gentleman's apiary about a fortnight ago: he had lost all his bees, and lots more are in the same position.

I am happy to say the expert of the Association I belong to now will do his duty, and without any extra fees.—W. C. WRIGHT, *Tamworth Apiary.*

ASSOCIATIONS AND THEIR WORK.

[1881.] It is only a few weeks since I knew that there was a *B.B.J.*, and for the few weeks that I have known the *Journal* I have read it with much pleasure, and find much good from it, as I am only two years old in the bee-fancy, and will have long to live to learn the true facts of bee-keeping.

I see one of the objects of the British Bee-keepers' Association is to assist County Associations. Now, in the first place, did any of your Blyth or Morpeth district readers ever hear of a branch going to start at Morpeth? I never heard one out of Morpeth ever mention it. Has there been one started there? If so, what is the result? I would like to know, because at many of the local flower shows there could have been classes arranged for various bee appliances and honey; and now is the time for making out the schedules for another year, and to have a little advice from a county Association; also a promise that the members would make a few entries at each show as an encouragement to help others on. I would like to ask a question: Was it not possible for an experienced bee-keeper to tell that it would be useless for any one to send bees to heather? I am sure if a little advice had been given, it would have saved bee-keepers many pounds, as everybody is aware the cost of getting ready and going to the moors with bees; for, by the dreadful loss that some have sustained through going, I know one fancier who lost eight bar-frame hives, and many have died since, not having time to get the feeder on after their return.

Sir, your suggestion a week or two back, namely, for county Associations to take working men's bees for the winter, to feed and attend to them for a small allowance, might work with good results. I know of one old man that had eighteen stands. He got over twenty swarms and casts, and he was very bright as to his prospects. He said that he might be able to bank a little cash after the honey season, but his prospects were blighted, and his only resource run out. He depends entirely upon the bees, and fruit from his garden, to keep him. Now, in such a case as this, a man past his work, and nothing to live on, I think it would work admirably well if your suggestion was acted upon.—A BEE FANCIER.

[Can any of our readers give any information respecting the Morpeth Association?—ED.]

Echoes from the Hives.

Honey Cott, Weston, Leamington, 12th Nov.—After the worst summer I have ever known since I have kept bees (nearly thirty years), I have the satisfaction of knowing that my bees will not come to grief for want of food, as I have fed over half a ton (!!) of sugar; but I am glad to say I have got them all in fair order, and packed up for winter, of which we have had a taste lately. It has been so cold that only just a day or two have the bees been able to fly: now we must one and all hope for a better season next year.—JOHN WALTON.

Laibach, Carniola, Nov. 8th.—Winter has come upon us suddenly. Only last week bees flew merrily: temperature was mild, and I put up queens easily in the open air. Now we have several inches of snow, and it is cold enough for December. The season has been a poor one; honey crop much below the average.—F. B.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements.

R. M'C.—*Extracting Wax.*—The combs should be placed in a fine sieve over a pan of water, and put into the oven. The heat of the oven melts the wax, which drops into the water, and it can be taken off in a cake

when cold. If you have a large quantity of combs to melt, adopt the plan of boiling up old wax recommended by Mr. Hooker. See *Guide Book*.

A Cottager.—The amount of food is not sufficient to conduct your bees safely through the winter to spring. You might introduce beneath the quilts and above the brood-nest further supplies of sugar-cake. With a little attention on your part we feel assured that your pains will be rewarded by having prosperous stocks next season. We thank you for your recipe for destroying wasps.

R. Chapman.—*Mites in old Combs.*—The mites will not do much injury, beyond destroying the pollen. The danger to be guarded against is the increase of the wax-moth. The fumes of sulphur will destroy the latter.

A Hallamshire Bee-keeper.—The tone and diction of the communication forwarded preclude its insertion in our columns. We would suggest that it be sent to 'the oldest bee journal in England.'

J. Kearley.—1. *Sugar Cake.*—It would not be desirable at this season to act upon any of the suggestions you have made; it would be preferable to keep the stocks distinct and place a sugar-cake above the feed-hole. 2. *Unsealed Combs.*—It is possible to artificially seal artificially filled combs by dipping a brush in melted wax and passing it lightly over the cells; but we should recommend removing such unsealed combs and feeding with sugar-cake.

T. C.—*Spare Combs* should always be stored away for winter in a dry, fairly-warm place, and they are best wrapped up in paper. They would get mouldy in the hive behind the dummy board.

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Editorial, Notices, &c.

SECOND-CLASS EXAMINATION.

The attention of candidates having gained third-class certificates is called to the announcement on page 565, that the annual second-class examination is fixed for Saturday, December 15th. Candidates intending to compete should give notice to their County Secretary on or before Monday, December 3rd.

HIVE SITUATION.—CELLAR WINTERING.

The modern bee-keeper must leave no stone unturned that may add to his profits; and the subject now under consideration has as much to do with his success or failure as many other of the important matters generally brought to the front. Close observation and a general economy in working the material one already has in hand go further towards attaining success than the employment of every new or expensive apparatus brought to public notice.

The situation of the hive is of greater importance in winter than at any other season, and we take up the position that so long as the sun can shine upon three out of the four walls of a hive, it matters little which way the entrance faces. We have had them placed all ways, and could find no noticeable difference in the respective results; but when we come to the question of distance from the ground, situation in bee-houses, or sheds, it is quite a different matter.

It has many times been demonstrated that hives reared above the ground on legs do better than those placed just off the earth and resting on a brick or two. The difference is most apparent in wintering; the greater dampness nearer the ground, added to the consequently lower temperature, being detrimental, and, of course, placing at a discount any colony so situated, if it does not entirely run out before the summer commences.

Standing in a bee-house, and closed in all round, as the sun appears the temperature rises quickly, and this is of benefit to the whole of the hives; therefore the direct rays of the sun are of little moment. With any house arrangement of the kind, however, the least side will be cold and shaded towards evening, so that the bees returning in the cool evenings of spring and autumn will soon strew the ground by the hundreds if hives are placed along that side. The same will occur with open sheds, which have the added disadvantage of draught. In this case, if the hives never feel the rays of the sun, the winter will not be far advanced before dysentery sets in, soon to be followed by utter ruin of the bees.

Cellar wintering is a plan not much followed in this country. However, with a temperature ranging anywhere between 50° and 60°, there being no disturbance from draughts, and no extremes of temperature, the sun is of no benefit, in fact, must be excluded if we wish the bees to keep quiet during their long night. The admission of fresh air by the most suitable means that will provide it without a through draught is also an important consideration. The windows or doors admitting such air must be carefully guarded, according to the variation of temperature outside, and any rapid rise on the inside induced by any excitement among the bees at the approach of warmer weather, or from any other cause.

The hives should be placed on staging arranged that the lower tier may stand some eighteen inches above the floor. Place the hives as far apart as space will permit; block each hive up about an inch or more from the floor-board, keep the usual warm covering on top; and where they must be stacked on each other, see that they are not situated in such a manner as to give the respective colonies free access to each other, or so that the free circulation of air is impeded. The bees are not to be confined, but let the hives be spaced about the width of a hive between, which will prevent any uniting except it be with some queenless lot.

In a variable climate like ours, it should certainly be an advantage to be able to place bees in a cellar during winter, as the preservation of life is great where an even, temperate atmosphere is secured, and no flights occur for several months. Why is it English apiarists have not adopted this method? Possibly many have not the place suitable; but, without a doubt, the great reason has been the very inconvenient hives in general use, which are both too large and awkward to permit of ready handling.

We are now experimenting with some forty colonies placed in a commodious cellar, and will from time to time report their progress, as well as give the special conditions under which the said stocks have been treated.

GLEANINGS.

In the *American Bee Journal*, L. J. Abbott in a paper on division-boards says, how to properly construct a division-board is of some importance. Solid boards answer very well, but such are liable to warp, and make their use not quite so handy as those that are true. Those made of thin material and the interior filled with chaff have advantages. Whatever kinds are used, it is of importance that the ends have some material of a yielding nature tacked to them, so as to allow this board slight friction to hold it when crowded into place.

In the *Southern Cultivator*, J. M. Jenkins says that to guard against robbing we must be particular in opening hives during a dearth of honey-flow, and not let it commence. There must be no cracks where a robber-bee may sneak in to get the coveted treasure. Keep the entrance contracted to correspond with the strength of the colony, so that they may be able to guard it. The man that has one real good case of wholesale robbing on his hands will never forget it, and for the time being, at least, he will wish he never saw a bee.

In the *American Bee Journal*, J. A. Green, writing on the theories of the first cause of foul brood, says that the credence given to them is no doubt largely because they are in accord with what is known as the 'germ theory' of disease. This is a very convenient pair of shoulders on which to lay the burden of most of the diseases that afflict the inhabitants of this mundane sphere. He does not intend to attack this theory, but says that the whisper, though it is not unheard in scientific circles, that over-zealous investigators have sometimes mistaken effect for cause in concluding that because bacilli accompany a disease they necessarily produce the disease. There are objections to the bacillus theory in the case of foul brood. One is that Cheshire declared himself unable to detect either bacilli or spores in honey, and gave it as his opinion that the disease was never, or at least but seldom, transmitted by means of honey—so far as he knows no microscopist has had any better success in detecting either bacilli or spores in honey. Yet the almost uniform testimony of all who have had practical experience with it is, that it is through the medium of honey that it is most frequently and surely transmitted. The most practical and successful methods of cure are based on this assumption, while those which ignore it have in practice proven uncertain and unreliable.

In the *Prairie Farmer*, Mrs. L. Harrison says in respect to balling the queen: In looking after a swarm that had just issued she found the queen balled in front of the hive near by. Now in releasing the queen thus balled, if the bees are pricked off, she is apt to be stung to death in the operation, but when the ball is thrown into water, then every fellow is for himself. Life-preservation is the first law of nature, and the queen is no longer thought of, and when the queen is released she can be taken from the water and secured. When she threw this ball into the water the bees swam away from her, but the poor thing was already dead.

In the *Revue Internationale* we find from M. Spühler, that at the meeting at Schaffhausen, the questions respecting the importation of foreign bees was discussed, also how to secure a better guarantee than that given by certain unscrupulous dealers. The trade in Carniolan bees has become large, and during the year 1500 colonies have been imported. The expectations which were based on the purchase of these colonies were in almost all cases not fulfilled. Sometimes they arrived late, containing few bees and often no honey. In one district, that of Val-de-Travers, twenty-four foul-broody colonies of Carniolans were supplied; and M. Bertrand says this is not the only case which has been mentioned, and that in future he will publish the names of any negligent or unscrupulous dealers who are shown to have delivered diseased bees. M. Kramer asked bee-keepers to report in the Journal and drew up the statistics which included 400 colonies. The result was a thorough condemnation of these men, more especially of Mordic and Ambrozic. The details were related at the meeting at Schaffhausen, and have entirely shaken confidence in the Carniolan dealers. At the same time he stated: *we must take the Carniolan trade into our own hands.* Actually this idea is about to be carried out, and M. A. Büchi has visited Carniola during the beginning of September and has purchased 210 good colonies. Some of these will be sold this autumn, and the remainder next spring.

BEE-KEEPERS' VOCABULARY;

Or, Glossary of Technical and Scientific Words used in Works upon Bee-keeping.

Bhootea-bee, or **Bhootan-bee.**—This bee is kept in Bhootan, and is believed, by Mr. Douglas, to be specifically distinct from *Apis indica*, being larger, and in size between this species and *Apis mellifica*. The worker combs have 5½ cells and drone combs 4½ cells to the inch. The bees are very dark, almost black, with light hair, and are exceedingly mild in temper, in fact, cowardly.

Bifid. *a.* (fr. *L. bi*, two and *fid*, stem of *findere*, to cleave.)—Applied to the poison-glands which divide at some distance from the poison-sac; any structure divided into two parts by a deep cleft.

Bifurcate. *v.* (*L. bifurcatus*, two-forked.)—To divide into two branches or forks.

Bike. *n.*—A nest of wild bees. (Northern dialect.)

Biliary tubes. (*L. bilis*, bile, and *tubus*, a pipe.)—Long narrow tubes which enter the walls of the upper end of the small intestine and are supposed to be secretory in function. They are usually called Malpighian vessels or ducts, and sometimes urinary tubes. They were formerly erroneously held to be biliary organs, but they are undoubtedly urinary organs.

Bilobed. *ppl. a.* (fr. *L. bis*, two, and *mod. L. lobus*, a lobe.)—Having two lobes. The brain of the bee is bilobed, having two convoluted lobes borne upon short stalks and called by Dujardin 'pedunculated bodies.'

Binocular. *a.* (fr. *L. bini*, two each, and *oculi*, eyes.)—Performed by or adapted to both eyes.

Biology. (*Gr. bios*, life, and *logos*, discourse.)—The science of life. In its widest sense it includes life in all its forms in earth, whether animal or vegetable.

Black-bees, or **Blacks.**—The common honey bees, also called German bees and brown bees.

Blastoderm. *n.* (*Gr. blastos*, germ, and *derma*, skin.) The superficial layer of the embryo in its earliest condition.

Bleached wax. Bees-wax from which the colour has been removed either by exposure to the sun or by some chemical process.

Blood. *n.* (*Sax. blod.*)—A colourless liquid circulating in the body of the bee, by which the tissues are constantly nourished and renewed.

Blood circulation. The blood enters the dorsal vessel by valves, called dorsal valves at the sides of chambers which are connected with each other by similar valves. As the chambers expand and contract the blood is forced forward to the opening near the brain, whence it soaks through the body to the posterior part, where it again enters the dorsal vessel.

Blood-royal.—Applied by old writers to virgin queens.

Blue-tit or **Titmouse.** Sub-family of birds (*Parus coeruleus, Parus major*) which feed on insects and larvæ, and frequently in winter on bees.

USEFUL HINTS.

Weather.—November has this year maintained its character, fog prevailing everywhere, but the temperature is high, and during the few hours of sunshine vouchsafed bees have been merrily disporting themselves in the open air. We hear that 'rooks commenced building their nests at Eastburn, near Driffield, East Yorkshire, during a spell of mild weather last month, and there are now eggs in the nests. These birds have also been at work in a rookery at Driffield.' If the mild weather continues, we fear some of our queens will imitate the example set by the rooks.

We have just gathered fine blooms of geraniums and roses on this 17th day of November. Hive-stores are being rapidly consumed, and cottagers' bees, we regret to add, are rapidly dying. That 'bees will be bees next spring,' according to the terse, pithy saying of the knowing ones, we have no manner of doubt, and we fear the losses amongst more advanced bee-keepers will be far beyond the average. In all probability the sale of bees will be more remunerative next season than the sale of honey.

Minorca Bees.—Our Editor, writing under date of the 7th inst., says,—'Yesterday I examined a hive of Minorca bees. They are very black, and dreadful stingers, and there are some very peculiar points about them; for instance, they have built barricades in front of entrance, so that only one bee can pass through, and there are from twenty to twenty-five holes. They have no doubt inherited the habit, and have done it, I think, as a protection against the Rose beetle, which is common in Minorca. Other bees do not do this, but where the death's-head moth is common they build long barricades inside, so that the moth cannot enter.'

Some years ago a colony of Syrian bees, located in one of our houses, whose next-door neighbour—a hive of Cyprians—was fiercely attacking it, evidently intent on robbing, built a similar barricade to that described above across the entire entrance, of 6 inches wide by ½ an inch deep. This took place in the month of September, and the material used was a mixture of wax and propolis. We have no experience of English bees ever acting thus.

Propolis and Enamel Cloth.—Years ago Mr. A. I. Root, editor of the American *Gleanings*, made the following remarks on propolis and wintering:—'Much discussion has arisen in regard to the habit of bees of making all openings tight with propolis. *Theory* says, if allowed to follow its bent, or instinct, the bee will smother itself to death. *Practice* says it does, at least at times, so prevent the escape of moisture, that its home becomes damp and wet, and filled with icicles, so that it suffers, or at least such is the case in the hives we have provided for it. Who is right? the bee, or the enlightened bee-keeper? I think the greater part of the fault lies in the hive we have given it. The enamelled cloth, which I have lately been using for covering bees, is as impervious to air and moisture as the propolis collected with so much pains and trouble. If the outside of this is allowed to get frosty, it will, most assuredly, condense the breath of the bees on the inside; and if the outside is but thinly protected from the weather, icicles will certainly form on the inside and freeze the bees all fast in a lump. Now I should have no fear at all in allowing the bees to wax up everything as tight as they wished, if I could have their winter apartment made so small that they completely filled it—filled it so full indeed as to be crowded out at the entrance, unless in very cold weather—and have the entire outside protected with some non-conductor that would enable the bees to keep the inner walls warm at all times, and I think we should have no dampness. With chaff-packing and chaff-cushions I have succeeded so well, that I am perfectly willing that the bees should fix up as snug for winter as their instinct prompts them to do.' Here we have laid down all the requisites for safe wintering—impervious quilts covered with chaff-cushions; thick, double-walled, or chaff-hives, and bees crowded into a small space. We have only to add, plenty of bottom ventilation and all modern requirements are present, sufficiency of good and wholesome food being implied, of course.

Removing Hives.—The winter months are the best time for removing hives to different positions in the apiary. If this is done during cold weather, when bees are unable to fly for several weeks, there will be no loss, and it is best to get the work finished in suitable weather. Care should be taken neither to jar nor shake the hives, nor in any way to disturb the bees during the removal. Let a spirit-level be used, so that the hives may stand perfectly level, but where the frames range from back to front the hives should be raised an inch at the back. If the hives are placed in their new position early in the winter the bees will have opportunity, when gleams of sunshine occur, of marking the change of locality, and confusion, when spring flights begin, will be avoided. Bees have a very acute sense of smell, and unpleasant odours arouse their anger. So long ago as the time of Aristotle it was remarked that bees would sting furiously those who were scented with odours unpleasant to them. No nuisance, therefore, such as foul drainage, manure-heaps, &c., should be allowed near the hives. A dry, sheltered position lying open towards the south and well sheltered from the north, is most desirable.

The outer cases and roofs of our hives are all painted with Carson's black varnish, which we find especially useful during winter, as it absorbs the heat of the sun's rays, and is highly advantageous to the bees; while in summer any ill effects of excessive heat are remedied by slightly raising the covers and providing ventilation below. But many of our hives have partial shade from overhanging deciduous trees—a decided advantage where it can be had.

Entrances should be constantly examined, and kept clear of dead bees and other refuse, and while snow lies on the ground, particularly in bright weather, should be protected from the sun's rays by boards placed in front. If this precaution is neglected large numbers of bees will perish by alighting on the snow, and instantaneously becoming chilled. On numerous occasions it has been to us a piteous sight to behold the snow covered with dead and dying bees in the gardens of careless and ignorant bee-keepers. In such weather beware also of the blue-tit, whose depredations are much to be dreaded.

Sparrows should not be allowed to roost or to congregate in the neighbourhood of the hives. Field-mice are also great enemies of the bees, burrowing into the crowns of straw skeps, and eating their way in at the entrances. To be forewarned is to be forearmed.

Purchasing Bees.—To those about to commence bee-keeping, purchasing bees in the winter months is not recommended. In the main we agree with Mr. Simmins, that April is the best month. His remarks in a 'Modern Bee Farm' are much to the point:—'When you have decided to make a start, purchase your bees about the middle of April, and have them removed to your apiary at once. If you begin at any other season the first great mistake is made. Bees moved in April undergo just that excitement which induces a healthy activity at exactly the right time: the queens become energetic under the consequent stimulation (of removal), and better progress is made than if they had not been disturbed. If moved in February or March the same excitement causes the loss of thousands of the older bees, through flying for what they cannot obtain at that early period: the large patches of brood lose the warmth hitherto given by such workers, and the hive deteriorates to such an extent that the whole season is unprofitable. By purchasing in April there are plenty of young bees to fall back upon: you get only good stocks which have

passed the ordeal of winter; there is no further risk, and the whole season is before you. If obtained at a later date, the first year is lost, and the excitement caused by late packing and travelling is not simply injurious, but absolutely ruinous. These statements are based upon hard facts and experience, and the reader will do well to be guided thereby.'

All this is very true, but who will have stocks for sale in April next? Alas! we fear that such will be few and far between. From all quarters we hear the same cry—'The cottagers have already lost their bees.' But to such keen, enterprising apiarists as Mr. Walton, who tells us, in our last issue, that he has no fear of his bees coming to grief for want of food, since he has supplied them with more than half a ton of sugar (in syrup, we suppose), and that they are all in fair order, and packed for winter; to such men, we say, the reward is sure. Knowing that Mr. Walton is an 'old apiarian hand,' and a very successful one, we should be pleased to see a full statement of his *modus operandi* of winter preparation, feeding, &c., published in the *Journal* for the benefit of others.

In last 'Hints' for 'Troglodyte' read 'Kapnodyte.' The error arose from a 'slip of the pen.'

To Mr. Seager's implied censure (1873, p. 555) we can only reply that we have never 'sat upon' him, as he is pleased to put it. Our veil—to him, at least, and, we think, to the majority of our readers—is thoroughly transparent, and has been assumed for no sinister motive.

On the repeated misrepresentations of 'Amateur Expert' we decline to make further comment.

As a useful hint to Committee, if we may be allowed to advise (since there are certain *concionatores turbatoresque* at work, whose calling would seem to be—

'. . . Spargere voces
In vulgum ambiguas')

we would say, observe the maxim contained in the Leonine verse,—

'Audi, vide, tace, si vis vivere in pace.'

The time for action will come ere long: until it arrives —*moramini*.

THE POLLINATION AND PERFORATION OF FLOWERS.

(*Continued from p. 551.*)

Fertility of Perforated Flowers.—The opinion is current that perforated flowers are not as productive as unperforated ones. Delpino has shown that some perforated flowers are absolutely sterile. Ogle states that many flowers of *Phaseolus multiflorus* fail to produce seed because of perforations.

I doubt whether there are many flowers in which one can find more perforations than in *Symphytum officinale*. In stocks which have several thousand flowers, hardly one can be found which is not perforated. Several stocks in the Botanic Garden gave me ample opportunity of seeing the results from perforated flowers. I did not undertake to count the ripened fruits, but the greater number of flowers developed some nutlets. At this time I had not seen Loew's experiments on this plant. His results are so striking and conclusive that I give them somewhat in detail.

On the 11th of June, 1885, he took several branches which had passed anthesis. On these he had seventy-three flowers, and was careful to remove later flowers; on the 4th of August forty-six flowers were dry, while the remaining twenty-seven flowers had matured fifty-one nutlets, so that thirty-seven per cent of the flowers were more or less fertile.

The full fertility of many plants, as Darwin has shown, depends largely upon cross-pollination. Insects do not commonly visit flowers unless they get nectar or pollen in return, so that, when a flower is constantly robbed, the regular pollinators do not receive their due share of nectar or pollen, their visits are fewer, and consequently there is less chance for cross-pollination. If the plant is capable of self-pollination, seeds may be developed, and often in great abundance; yet Darwin has shown that the progeny of self-fertilised flowers is less vigorous than from cross-fertilised flowers.

If the structure of a flower is such that self-fertilisation is prevented, and insects do not go to it in the regular way, sterility may result. But in most of the flowers perforated there is an abundance of nectar, and insects which perforate flowers are very hasty in their visits, and therefore always leave some nectar, as can be seen in many cases where the perforator first robs the flowers, after which numerous other insects use the perforations to get nectar, while others again visit the flowers in a normal way. On the whole, I am inclined to think that sterility results more from the disharmonic action of perforating insects than is usually supposed.

Insects certainly show considerable intelligence in making perforations, or using those made by other insects. One of the most remarkable cases is that observed by Francis Darwin, in a cultivated variety of the everlasting pea: where the nectar is enclosed within a tube formed by the united stamens, at the base of which are two natural openings, one on each side, the left being the larger. Humble-bees, which bite holes through the standard petal, always operated on the left-hand side, so as to reach the larger passage.

Muller records an interesting case where a female of *Bombus terrestris* entered a flower of *Vicia Faba* in the normal way. Being unable to get the nectar, the insect forced its head under the banner, and stretched its tongue as much as possible, but, being still unable to reach the nectar, it withdrew its head from the flower, and after cleaning its tongue with its forelegs, flew to another flower, where the same performances were repeated; but in the fourth she bit a hole in the corolla above the calyx.

Humble-bees show preferences in the flowers they perforate. Dr. Wm. Ogle states that in Switzerland he collected 100 flower-stems of a blue variety of *Aconitum napellus* without finding a single flower perforated, while on 100 stems of the white variety, growing near by, every one of the open flowers had been perforated. This difference, Darwin thinks, may be due to different amounts of acrid matter contained in the flowers, the blue variety being distasteful to bees.

Why should insects perforate flowers? Darwin believes that, as a general rule, flowers are only perforated when they grow in large quantities close together . . . . Flowers grown in large masses are conspicuous, and therefore attract many insects; and as the perforated flowers usually contain considerable nectar, the number of insects visiting the flowers at any one time is very large, and, as Darwin has shown, some of the nectaries are sucked dry; now, in order to save time, for the flowers would have to be probed for their nectar, the insect makes perforations. To this rule there are exceptions, as has been shown in some of the cases cited, where an insect, unable to get the nectar in a normal way, takes to perforating flowers. Muller, Loew, and others, have shown that there is a certain correlation between the length of the tongues of *Hymenoptera* and the flowers they perforate, as can be seen by consulting their tables on flowers and their visitors.

To summarise:—It has been shown that flowers with deep-seated nectar are often perforated, and that in most cases the perforations are made by insects which are unable to get at the nectar in a normal way; that *Bombus mastrucatus* is more addicted to this habit than any other European humble-bee; that there is a certain correlation in the length of the tongues of *Apidæ* and

the flowers they visit in a normal way, but when this limit is reached flowers are often perforated; that conspicuousness of plants may account for some of the perforations, but most of them are attributable to the non-adaptability of the insect to the flower; that the insect uses considerable ingenuity in perforating flowers, attacking them in close proximity to the nectar, that this is individual experience, and not inheritance on the part of insects; and that perforated flowers are not necessarily sterile, but are often quite productive.—L. H. PAMMEL, *Shaw School of Botany, St. Louis, Mo.*—(*American Bee Journal.*)

BRITISH BEE-KEEPERS' ASSOCIATION.

Committee Meeting held at 105 Jermyn Street on Thursday, November 15th. Present: The Hon. and Rev. H. Bligh (in the chair), Dr. Bartrum, Captain Bush, R.N., Captain Campbell, Rev. J. L. Seager, H. Jonas, W. O'B. Glennie (Treasurer), and the Secretary. Letters were read from the Rev. R. Errington and Rev. G. Raynor regretting their inability to be present. The minutes of the last Committee meeting were read and confirmed.

Correspondence from the Berkshire Association and the Royal Agricultural Society in reference to the Windsor Show of 1889 was read and considered, the prize list being finally approved.

On the recommendation of the Educational Sub-Committee, it was resolved to hold the second-class examination on Saturday, the 15th day of December, the annual general meeting of the Association being fixed, subject to the approval of the President, for Thursday, February 21st.

In reference to the letter which appeared in our last issue from Mr. McClure respecting the attendance of the Committee at the Quarterly Conference, we are desired to state that, on the day in question, full Sub-Committees, 'Finance' and 'Exhibitions' (the latter being fully engaged in the revision of the prize schedule of the bee department for the Windsor Exhibition), had been sitting from 2 to 4 o'clock. At the close of these meetings one member of the Committee was compelled to return home, and another was temporarily absent from the Conference owing to indisposition.

Foreign.

AMERICA.

We have just received the Report of the proceedings of the Nineteenth Annual Convention of the North American Bee Association, which is henceforward to be called the International American Bee Association. The Convention was held at Columbus, Ohio, on the 3rd, 4th, and 5th of October last; but, owing to the poor season, there were only between fifty and sixty members present, of whom thirteen were ladies. The proceedings, under the presidence of Dr. A. B. Mason, was opened by an experience meeting, at which some of those present gave their experience on different matters. Miss Dema Bennett had received many reports, and nearly all reported failure. Dr. Tinker reported almost no honey from white clover, but some from yellow poplar, dark in colour, and which many mistook for honey-dew. Prof. Cook had received some heartsease honey from Iowa of strong flavour. R. L. Taylor's story was like that of others, and he only had five pounds per colony of surplus. If he had moved his bees twenty miles he might have secured 25,000 to 40,000 lbs. R. F. Holtermann reported that bees had wintered poorly in Canada, and the early honey-flow had been light, but the fall flow was fair. Mrs. Mary McPherson made her living by keeping bees, poultry, &c., and supported her children. From thirty-two colonies she had secured only 800 lbs. of comb-honey. J. Y. Detwiller spoke of the troubles of bee-keepers in Florida. This year he had had 1200 lbs. from forty colonies.

After this, at the reassembly of the members in the afternoon, a change in the usual proceedings was introduced by the singing of 'The Bee-keepers' Reunion Song,' the words being by Eugene Secor, ably set to music by Dr. C. C. Miller, many of the members joining in the song. The American bee-keepers are to be congratulated that they have amongst their number members who are able and willing to write and set to music such lively songs, and we should have much liked to have heard Dr. Miller leading with his fine voice.

After the singing, the first subject discussed was 'The best Age of Bees to go into Winter Quarters.' Dr. Tinker preferred young bees, those that had had one flight, and to put them into winter quarters as early as November 10th, as they then remain quiet. Dr. C. C. Miller thought, as amongst human beings so amongst bees, the old and the young suffered most from winter. Although not disagreeing with Dr. Tinker, he was not sure that he wanted very young bees. In the fall there are bees of all ages, some die early, some later; and if it were possible, he thinks it would be an advantage to have sifted out all the bees that would die before the spring. R. L. Taylor had fed his bees late in a warm October, and there was brood in the hives early in November, and the young bees did not harm but wintered unusually well. E. R. Root said they had wintered, in 1886-87, 200 colonies without loss, and they had almost all old bees. Dr. A. B. Mason preferred bees that had done a little work, and Prof. Cook thought there should be brood up to the end of September. A discussion then ensued as to how soon bees should begin breeding in spring. About half the members thought two months before the clover blooming was soon enough, the others preferred to have them begin sooner.

Professor J. W. Webster next read an interesting essay on the 'Honey-plant of Florida,' and pointed out the superiority of palmetto and mangrove honey. Several spoke in favour of this honey, and it was resolved to ask the editors of bee-papers to quote these under their proper names so as to distinguish them from 'Southern honey.' After a short interval another song was sung, called 'Dot Happy Bee-man,' also by E. Secor and Dr. Miller. The members were amused and set to laughing by Dr. Miller singing this and imitating the German dialect. In the discussion on the time of putting bees into winter quarters, Dr. Mason said he put his bees into cellars on October 19, and the consumption of food was six to seven pounds per colony. E. R. Root said their colonies consumed, on an average, 12 lbs. per colony. Professor Cook, who had done considerable weighing of bees, found the consumption out-of-doors was 15 lbs. and in cellars 8 lbs. R. L. Taylor, as well as Professor Cook, had noticed bees wintered best in the 'new Heddon Hive,' and thinks that it is caused by the space between the two hives, which enables the bees to pass from one comb to another in cold weather. Respecting sections open on all sides Dr. Tinker thought they afforded better ventilation, the combs are built out square and true to the edges and the section filled full. F. A. Eaton said the objection to them was that in crating the corners catch and tear the combs. Dr. Miller found no fault with ordinary close-sided sections. He had produced thousands and thousands of pounds of comb-honey, and the sections were well filled and bore transportation without loss from leakage. In the discussion on chaff-hives, E. R. Root said they afforded protection from cold, also from the direct heat of the sun's rays. The bees are always ready for winter, so far as protection is concerned, and in the cool nights of late summer do not drive the bees from supers. With chaff-hives there is no laborious carrying of bees in and out of the cellar. Dr. Tinker thought there were less stores consumed, but R. L. Taylor did not think so, although there

might be some early in the year. He did not like this limited capacity, as only fifty sections can be used on one hive at a time, and it was desirable sometimes to put on 100. Only one set of extracting combs can be used, and it is desirable sometimes to use several. Dr. Mason pointed out that eighty sections could be placed in a chaff-hive, but Mr. Taylor objected as they could not be all placed on the top, but some must be put in frames. Mr. Chase pointed out that Mr. Shane had two apiaries, in the one the bees are protected in spring by packing, and the other they are not. The packed bees always give the best results. At this stage of the proceedings a letter from the Rev. L. L. Langstroth was read, regretting that, owing to his having taken a severe cold, he was unable to be present. Respecting the width of sections, it was the experience of several that they made and sold ten thousand 1⅞ to one thousand of any other width.

Prof. Cook then gave an address on 'Experiments in Apiculture,' and said that, with one or two exceptions, the Michigan Agricultural College is the only one that has experimented in apiculture. Of the experiments intended to be made will be that of crossing different varieties of bees; another, that of determining 'the value of special planting for honey; and the third will be in regard to the adulteration of honey.' At present the bees at the College are a cross between Syrians and Carniolans, and they seem to possess the good qualities of both. He feels sure that bee-keepers do not adulterate honey, neither does he believe that it is done by grocers. He does not believe the chemist can tell positively in regard to adulteration, and experiments are to be made to determine, if possible, whether adulteration can be detected. After an address by Mr. Newman on the 'Importance of Experiments in Apiculture,' he spoke on bee pasturage, and he hailed the prospect of experiments on a large scale. He also said it will not pay to adulterate honey at the present very low price, and hence it is not practised, and does not believe advanced prices would bring it forward.

Mr. Root mentioned that Dr. Miller had secured large quantities of honey from 200 acres of cucumbers raised near him.

R. F. Holtermann next read an interesting paper on 'The Value of United Experiments in Apiculture,' in which he said one of the greatest failures has been in coming to conclusions too rapidly in adopting new, and (as far as theory goes) grand ideas which impress us. Sometimes the result of one season's experience leads us to believe we have made a discovery which will immortalise our names, and we advance and defend the discovery only to lead ourselves and others astray. To be of the greatest use these sanguine and selfish dispositions should be kept under, and all should unite and decide on some line of experiment. Let a line of work be decided upon for the coming year, and in one year, in certain directions, more progress can be made by this method than before in ten.

The Constitution and Bye-Laws for the Society were then taken into consideration, and the report of the Committee appointed last year was adopted. It will be remembered that Mr. Newman introduced the subject at the meeting last year, and the Constitution has been founded in the main upon the line of our British Bee-keepers' Association. It is proposed, amongst other things, to award diplomas to experts who have passed an examination, each diploma to be of three classes on the principle originated and adopted by our Association. A Honey Company, to be composed of a committee of five, is also to be formed to 'inaugurate places for the marketing and sale of the products of the apiary.' The reconstituted Association is to be called 'The International American Bee Association,' and is to hold its next meeting at Brantford, in Ontario, Canada, with Dr. A. B. Mason as President, and Mr. F. R. Holtermann as Secretary.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts* (see 2nd page of Advertisements).

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

PROVINCIAL ASSOCIATIONS.

[1882.] I am very pleased to see the question of affiliated associations is being discussed in your columns, especially by members of the Committee appointed at the recent meeting of the B.B.K.A. 'to consider the rules of affiliation and to submit such amendments as might seem to them desirable.' By placing your *Journal* at our service, or rather by permitting us to use it, we are able readily to make our views known to each other, thus saving much time and labour, and preparing ourselves for the meeting of the Sub-committee. Let us, then, think the question fully over, make up our minds what we approve and disapprove of, what we would recommend to the parent Association, and then let these conclusions be made known in the present manner. This course will not prevent members of the Sub-committee doing their work by correspondence, but it will lessen the necessity for it.

By all means let us do away with Rule I., which decrees 'one Association for one county,' and let us welcome every body of bee-keepers who will subscribe to the rules and pay the affiliation fee, which will, of course (I think), have to be reduced and arranged as suggested by Mr. Seager—a sliding scale regulated according to the number of members in each Association. The *quid pro quo* of medals, &c., could be in the same proportion, or the sucklings would probably be too much for the parent.

The other amendments as proposed by Mr. Lees McClure I cordially support, but I wish to say a few words anent the impression which seems to have obtained in some quarters (notably in a recent Editorial in the *Berkshire Bee-keeper*) that it is proposed to destroy or eradicate County Associations. No existing authority is yet powerful enough to do this; such a step would be similar to Turkey coercing Egypt. 'Even in our ashes live their wonted fires,' and, phœnix-like, we should arise, perhaps stronger and more orderly, out of such a chaotic confusion and combustion as would ensue from a pronouncement against our existence.

Mr. Seager seems to be credited with this idea of disposing of the Counties. He, however, thinks differently, for in the discussion on his paper he tells us he 'does not propose that the present County Associations should be done away with, but that their existence should not prevent the formation and affiliation of other associations in the same counties;' and here I quite agree with him. Mr. Graham, another of the Sub-committee, thinks the same, so does Mr. McClure. Mr. Webster believes the B.B.K.A. exists for the County Associations, and *vice versâ*. Mrs. Currey, I am pretty sure, is not for the extinction of the County. There thus remain of this Sub-committee Mr. Garratt, who expresses fear that the County Associations are doomed unless some means be found to give a fresh impulse to them; and Mr. Meggy, with whose opinions I am unacquainted. Six out of eight members—perhaps *seven* out of eight (Mr. Garratt alone remaining of doubtful vote)—give little probability of such a sweeping reform being proposed by this Committee, at any rate. Personally and selfishly speaking,

'twere a consummation devoutly to be wished.' I don't mind being confronted with a reasonable amount of work, but when one is surrounded with more than a dozen men could do efficiently, all the steam evaporates in useless effort, and queries like 'What is one among so many?' rise in the mind; lonely missionary thoughts creep into prominence; and a desire to be changed into 'cold missionary' on the sideboard of bee-keeping heathendom finally holds the field.

The Yorkshire B.K.A. has a president, 'an earl,' from whom we never hear in any way, not even in a *contributing* way; three lords, one earl, one bishop, two fine old English gentlemen—seven out of eight of our vice-presidents—well, ditto. The solitary exception, all honour and long life to him, regularly contributes, and after a most hospitable overnight entertainment to myself on the occasion of a lecture, paid all expenses of it, and proposed to pay mine, besides a lecturer's fee. I don't see why I should conceal his name—powerful in peace, as gallant in war—Lieut.-Col. W. E. F. Ramsden, Rogerthorp Manor, Pontefract.

Of a Committee of eleven, only six (more often two or three) *ever* attend meetings. The Hon. Treasurer only consented to take office from my predecessor on the condition that he should do no work! Thus, of twenty-one who should do some good to us, only seven are of any use. *Nunc dimittis, Domine.* True, as we have got the Craven Branch, the Hull, the Horsforth, the Ebor, launched on what seem will prove prosperous voyages; and when they get big enough (or the affiliation fees little enough), they will want to be classed A 1 at Lloyd's, and here we come by accident to the germ of the whole question: Are the affiliated Associations to have no representation on the parent Committee? This must in common justice be conceded: they should have *some* voting power. As Mr. Webster suggests, we do not want 'Home Rule' (Heaven forbid!); but the Committee (B.B.K.A.) will find concession in this respect conducive to a healthy growth, and the extension of its sphere of usefulness. Please do let us all be *synergetic* (Webster, W. B.), and let us pray—remember the self-sacrificing services of the officers of our higher Committee of the B.B.K.A. We owe them our warmest thanks, and faithful support and assistance.—R. A. H. Grimshaw (*Hon. Sec. Yorkshire B.K.A.*)

COUNTY ASSOCIATIONS.

[1883.] I am exceedingly sorry if Mr. Seager imagines that in my letter published in your issue of the 8th inst. I am attacking him, permit me to take the earliest opportunity of disclaiming any such intention, my attack was directed not against men but against a system. I do not think it was an unfair inference that his paper, to some extent, represented the views of the Committee, of which he is one of the most active members; however, I readily accept his disclaimer. But my object was to draw public attention to a fact which has been recognised by most observers, namely, that the British B. K. A. lacks the cordial support of the bee-keepers of this country, and, in consequence, its efforts have fallen off. This want of vitality affects not only the parent, but is spreading among the affiliated Associations, as it most assuredly will. If the head is sick the whole body suffers, and I feel that it is urgently necessary that something should be done to arrest this state of things, especially is this so after the disastrous season just closed, when our favourite hobby is, to say the least, under a cloud. I feel sure that if the British and County Associations are to continue a successful existence, something more will have to be done to bring the advantages of membership to many actual or intending bee-keepers who are now outside. In these days when a person is applied to for subscriptions to any Society they generally ascertain if they are likely to receive any tangible return for money spent before they consent to 'part.'

Now, of all others, is the time to take the matter in hand and discuss it. I hope some of our men of light and leading will favour us with their views on the subject, from past experience. The fact is the Annual Meeting of the B.B.K.A. is a purely formal affair, and what is wanted is a special meeting called, and a *representative* Committee of members formed to revise the constitution of the Association with the view to its being placed on a more popular basis, and to be brought into more active and direct contact with the County Associations, who shall have direct representation on the Committee.

The British B. K. A. is supposed to be the representative body of the national bee-keeping industry. Now take the Committee as last elected. I find it consists of ten clergymen of (I believe) Church of England, two military, and three private gentlemen. Those are drawn from the following counties:—Herts, 5; Middlesex, 3; Essex, 2; and Berks, Bucks, Kent, Surrey, and Sussex, 1 each. I must again repeat that I am throwing no reflection whatever upon any of these gentlemen, all of whom I fully believe to be animated with the best intentions; but I submit that they are not a representative body. I think the B. B. K. A. have made a great mistake in separating themselves so much from the County Associations. They should have treated the smaller bodies as a part of the greater, not of necessity curtailing their powers of self-management, but calling upon them to actively assist in the management of the central body, and by so doing to throw upon them their fair share of responsibility. Were such a state of things brought about I fully believe that the County Associations would loyally accept that responsibility, and rally to the support of the parent, and in so doing infuse new life into the whole. Fancy our friends Mr. M'Clure and Mr. Grimshaw travelling the hundreds of miles they do to attend quarterly meetings and to have no power of supporting their opinions and the wishes of their respective associations by a single vote! The thing is absurd!—A. D. Woodley, *Expert and Associate Secretary Berks B. K. A., Donnington Road, Reading.*

CARNIOLANS, &c.

[1884.] I have little more to say on this subject at present, but allow me to assure 'Amateur Expert' that I have no recollection of an old score against him to be paid off, neither am I in the habit of owing a grudge to any one. When I give an opinion on any subject it is done in the interests of truth, and not with any personal bias.

I shall ever be as ready to defend any point he may himself bring forward, as I shall to condemn any action of Mr. Benton or others, and *vice versâ*, where my own experience or observation shows me I am serving the cause of right. Where my opinion does happen to differ from 'A. E.'s' I am quite open to conviction—not by light banter, but when he can support his case by presenting solid fact.—S. Simmins.

MR. BENTON AND CARNIOLANS.

[1885.] I was glad to read the letters of Mr. Simmins and Mr. Howes in the last *Journal*. I have much pleasure in adding my testimony to the excellence and purity of six Carniolan queens which I have received from Mr. Benton direct during the past season. The queens were sent promptly on receipt of order, and all arrived in splendid condition, and were everything I could wish. The date of birth of each queen was notified. Mr. Benton, too, was very exact in the matter of discount, returning me a shilling more than I had deducted. A more straightforward and business-like man I have never had dealings with, and I have every confidence that he will supply the best article that can be obtained.

I also had some home-reared Carniolan queens from Mr. Simmins, and though I had to wait some time for them in consequence of the unfavourable weather, when they did come they gave me entire satisfaction.

I have introduced fifteen queens during the past season by Simmins' direct method with only one failure—that was a queen received from Mr. Simmins, which he replaced without a word, the second trial being successful.—GRANVILLE R. BAILEY, *Madeley, Staffs., November 10th.*

[1886.] With regard to Mr. Frank Benton's Carniolan queens may I be allowed to record my own small experience in the *B.B.J.* as to the kinds of progeny they have produced in my hands, and which are as follows?—In August, 1887, I received a first-grade Carniolan queen direct from Mr. Benton, which I introduced in accordance with Mr. Simmins' process, to a nucleus of two frames of English bees. She was at once accepted, and was very prolific considering the late time of the year, and in this stock not the slightest indication of yellow, or rather orange, appeared in any one of it.

On June 16th of the present year I received another first-grade Carniolan queen direct from Mr. Benton, and which was introduced by the direct method alluded to; the nucleus was also of the same size as the former one, and the bees English. The queen was duly accepted, and at the present moment her progeny well covers seven frames of standard dimensions, and I am unable to discover, after close examination, the slightest sign or indication of any yellow or orange band on any bee of the whole colony. The progeny are rather larger than the ordinary brown English bee, having the light-grey band peculiar to the Carniolan variety, are very quiet and docile, and are excellent workers, often flying in great quantities while other varieties are at rest. They have about 30 lbs. of wintering stores well sealed at the present time in their hive, about 15 lbs. of which were procured by themselves, the other 15 lbs. having been fed to the colony during the last two months.

[We have received also letters from Mr. F. Hirst, Small Heath, Birmingham; Mr. James Saddler, Forfar; Mr. G. Gordon Samson, Bournemouth; Mr. G. Munday, Leicester, to the same effect as the above, but the space at our disposal will not permit us to reproduce them. As we have now given a full opportunity to both sides of ventilating their views, we are of opinion that this discussion may close.—ED.]

SCOTCH BEE-KEEPERS AND THE *BRITISH BEE JOURNAL.*

[1887.] I well remember the time when Scotland could boast of her bee-keepers endowed with their literary talent in the columns of our *B.B.J.*; but, alas! the enthusiasm has gradually died away, and week after week the *Journal* appears without a sentence or echo to remind us that bees are now being kept in Scotland. This is a matter to be deplored when it is a well-known fact that in Scotland there is quite an army of full-fledged bee-men (not amateurs) whose writings would adorn the pages of any weekly. Scotchmen should remember that the *B.B.J.* exists for their good, and is kept up by voluntary contributions. Why, then, should the bee-keepers of Scotland take so little interest in writing in the pages of so worthy a periodical as the *B.B.J.*?

I must add a word of comment in favour of our brethren across the Border, whose frequent contributions are worthy the name of bee-keepers. I jot these lines in good grace in the hope that I have struck the key-note of some of our veteran Scots, who will from time to time give us a yarn (not Jack's yarn) through the columns of the *Journal*. I have no fear the Editor will give the same courtesy to Scotchmen that other correspondents receive; at least, this is the desire of one who lives not a day's journey from the auld ancient city of—SAINT MUNGO.

INTRODUCING QUEENS.

[1888.] In your issue of November 1st, Mr. 'Amateur Expert' states that he successfully introduced a Carniolan queen on the 15th ultimo, and gives the particulars. I introduced a Carniolan on the 24th successfully by similar means, but used a slightly different stage, which perhaps some of your readers would like to copy during the winter months in readiness for another year. The queen arrived in a cage made out of a piece $\frac{3}{8}'' \times 1\frac{1}{2}'' \times 4''$, containing three holes, two $1\frac{1}{4}''$, one $\frac{3}{4}''$, the $\frac{3}{4}''$ filled with Good candy, and on each side a board $\frac{1}{16}''$ thick was nailed to keep the bees in.

Having found the old queen and removed her, I put the quilts on, with the feed-hole open. I poured a few drops of scented syrup on the hole, and put on a stage made as follows:—Two pieces of $\frac{1}{2}''$ wood (crossed to prevent warping) 5" square, with a 2" hole in centre, covered with perforated zinc, in the centre of which was a hole $3'' \times 1''$, under which was a piece of plain zinc $1'' \times 6''$, with hole to correspond with the hole in the perforated, but 1" nearer one end than the other (so as to be opened or closed at will), on the top of which I fastened pieces of wood having $\frac{1}{2}''$ rabbets taken out of the underneath side, so as to form a slide for the queen-stage, so that it could not be knocked on one side. I now took the queen-cage, unnailed one of the $\frac{1}{16}''$ boards, and slid a piece of glass in its place to examine the queen. I then slid the cage under the rabbet, the $1\frac{1}{4}''$ holes first, leaving the hole containing the candy on the woodwork, the others going over the 2" hole, and crossways of the hole in the zinc. I now wrapped them up for two days, and then after dark pushed the plain zinc through, which opened the hole, and let them to go down at pleasure without at all disturbing the bees with any smoke.—ALPHA.

NOTES ON BEE HIVES.

SIZE AND APPEARANCE OF QUEENS.

[1889.] Every one has heard how certain animals display peculiar habits in order that they may not rush headlong into the power of the enemy, and that even man is deceived by appearances. It is very easy to deal with the white and the black, but the difficulty is to deal with the grey. It is perfectly easy to pronounce judgment upon, or recognise, single or individual queens and ordinary workers, when placed separately by themselves, but the difficulty is to recognise a queen from an ordinary worker when we are hurried or pressed for a decision, or to do so in a given time without injuring the bees, &c., of the hive; and we might include awkward positions, imperfect light, large populations, and hives containing a queen no larger than an ordinary worker bee. Supposing a hive contained a nine-pound lot of bees, how many per cent of the bee-keepers of average experience and capabilities could readily or eventually tell whether a hive contained a queen, and how many of them could pick the queen out if she was the size of an ordinary worker and no larger.

It has been granted that queens may be of various sizes, so that we have no dispute *re* size; there is not, I need hardly say, any dispute about their being different races of bees, and that the colour and markings of queens vary in appearance or reality; but I will say that just as a bird, or other animal, or insect, has habits to enable it to be not recognisable to its enemies, so I have observed in the mother bee some such appearances. Is there one who can say they are acquainted with all the habits and appearances of a queen-bee throughout its life history, or even while searching for it in a hive, and are able to at once distinguish and pick up any queen?

and is it possible that there is such a person, and that he will never overlook just sufficient to not distinguish or pick out any queen?

Without detracting one atom from my statement made on page 439, to which attention has been called, I wish to state that I really meant it to be understood what I still maintain, that in some cases, unless the most skilful, elaborate, and painstaking search is pursued, it is impossible to say whether a hive contains a queen, as it may be overlooked on account of its size and appearance, or similarity to that of an ordinary worker bee.—T. Bonner Chambers, F.L.S., *Tref Eglwys, Caersws, Montgomeryshire, October 29th.*

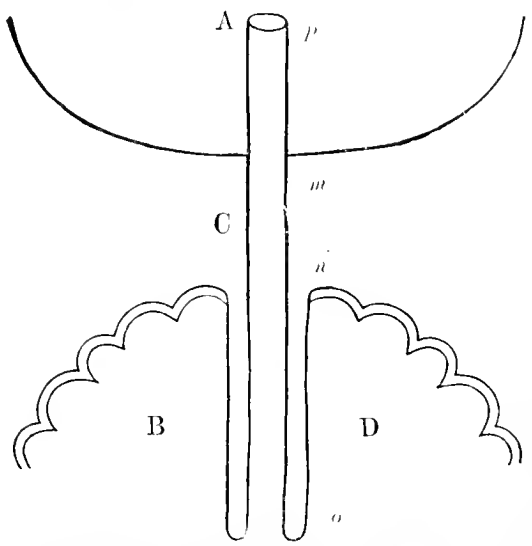
WATERPROOFING HIVES.—ICEING SUGAR.

[1890.] In your 'Editorial' of November 8th, you recommend hot tar for waterproofing cotton cloth or canvas; any one who has used tar knows you must use more than one coat to make it thoroughly waterproof. I send you the following simple receipt for rendering such substances impervious to wet, and much cleaner in application, thinking it may be of some use to your readers. Take pale linseed oil, three pints: sugar of lead, one ounce; white resin, four ounces: grind the sugar of lead with a little of the oil, then add the rest and the resin. Stir the whole well together in a large iron pot over a gentle fire. Apply the mixture with a large brush. 'Useful Hints' in the same number, in the receipt for Good's candy, says the best sugar for the purpose is that termed 'Confectioner's Dust Sugar:' as some of your readers may wish to get some of the same, the trade name of the sugar he refers to is iceing sugar. —Amateur Bar-Frame.

CONTRIBUTION TO THE PHYSIOLOGY OF THE HONEY-BEE.

The Stomach-mouth.

[1891.] If we carefully examine the honey-stomach of a bee, we shall see on the lower part, somewhat sideways, a small body about as large as a half poppy-grain. This body is the organ which Schönfeld named the stomach-mouth. This organ has been known many years, but its functions were not correctly explained.



A is the honey-stomach, *B* the true stomach, *C* the stomach-mouth.

The cut is no true picture of the organ. The opening *p* is closed by four three-cornered lips which, together, form over the round tube *n, m, p*, a pyramid. The bee can open these four lips arbitrarily by muscles. The tube *p m n* is prolonged into the true stomach till *o* (*n o* is about one millimetre long) here turns up and goes back to *n*, where it is in connexion with the wall of the true stomach. Around the throat *m n* are a great number of muscles. It is easy to see that the throat *m n* can be prolonged by turning out the pieces *n o* inside of the true stomach. This organ is very important; without the same the bees could not store honey at all. We shall see this if we explain

How the bees eat honey.

It is well known that the bees take honey or nectar from the cell or from flowers by their tongues. How this is done I will not explain here. This fluid goes through the pharynx into the honey-stomach. If the stomach-mouth in *p* had a round opening only, as represented in the cut, the food brought into the honey-stomach would at once pass into the true stomach, but the four lips close this opening, and so it is possible that the honey-stomach can be filled, and by contraction of of the same (arbitrary again) the bees can empty this honey-stomach again through pharynx and outer mouth.

But necessarily the four lips are to be closed and opened arbitrarily. If the bee wants to get some honey into the true stomach, the four lips are opened, and some honey goes from the honey-stomach into the true stomach; so these four lips are closed and opened, if the bee wants to eat or not.

We see now how it is possible that bees can winter and take no honey from the cells for some time. A swarm can be confined for some days, while a bee with empty honey-stomach will starve in thirty-six hours.

We can say this organ is the true mouth of the bee, and the true alimentary canal commences here. The outer mouth and the tongue are merely the hands by which the bees eat, and the honey-stomach is the store-room.

How the bees eat pollen.

Somewhat different is the function if the bees eat pollen. The pollen comes into the honey-stomach through the outer mouth and floats here in a fluid. This fluid is honey *and water*. The stomach-mouth can take those pollen-grains only which float quite near the opening *p*. But here are some hairs; as soon as a pollen-grain touches these hairs the four lips are opened, and so the pollen-grain is caught; the same cannot go back into the honey-stomach when the mouth is opened again, because other hairs hold it back. If a few pollen-grains only are in the honey-stomach, the function is a little different; the honey-stomach is contracted, and this is done by pushes; hereby the piece *m p* moves differently, sideways, and so the pollen-grains can be caught.

Here comes the turned-up part *n o* in function. If the honey-stomach is contracted, it moves in the direction to the head of the bee, and the part *n o* slides out of the true stomach. More important is this if the bee vomits the honey, when the honey-stomach is very quickly moved against the head; this would be dangerous for the fine tube without the turned-up part. Around the part *m n* are muscles which save the organ from moving too far from the true stomach, and pull the honey-stomach back after the contraction is finished.

We have further to explain for what purpose the bees eat pollen. It is known that larvæ, as well as bees, need a certain amount of nitrogenous food like other animals. Honey contains a very small amount of nitrogen (about 0·17 in 100 parts), so we have pollen only for this purpose.

In the first three months of the winter, as long as the bees are very quiet and their vitality is lowered, the bees eat very little honey, and they may need no pollen at all; more than this, they may, to their advantage, spontaneously dispense with pollen. But as soon as

they become uneasy and desire to breed, they need some pollen. It is impossible at all to prepare the jelly for larvæ without pollen (more about this later).

That bees need pollen is proved by the energy in carrying pollen in early spring and the great amount of pollen consumed at this time, when breeding goes on rapidly. This breeding is stopped when, from unfavourable weather, they cease bringing in pollen for some time, and, finally, disease and death of the nurse-bees are the result if they are forced to breed for some time without pollen, as many experiments have proved. Further, the bees need pollen to keep their own body healthy and to preserve their vitality. It is very difficult to prove by experiment how long worker-bees can live without albuminous food, because we cannot keep them confined as long.

Queens and drones do not eat pollen, but honey only. To get the necessary albuminous food, they are fed with jelly or chyle of the worker-bees. To find out how long drones can live on honey only, Schönfeld experimented in the following manner:—Two combs, each one containing 200-300 grammes of freshly gathered honey, were each surrounded by a wire screen, so that drones could move on the combs. One of the combs received a single wire screen, the other was surrounded by a second wire-screen, so the drones could not have been fed by the outside bees.

In a cold, rainy week, 200 drones were caught, and to each of the combs 100 drones were introduced. These combs were hung in the centre of the brood-nest. On the evening of the fourth day the drones in the double screen were very weak; on the fifth day all the drones were dead but four. The drones in the other screen were as lively as ever, and flew away when a few days later they were released. Both were in the same condition: the want of albuminous food only could be fatal to these poor fellows. Worker-bees would surely live longer; but, nevertheless, this experiment is a proof of how necessary the pollen food is for the bees.—L. Stachelhausen, *Selma, Texas* (*American Apiculturist*).

(*To be continued.*)

BORGUE HONEY.

[1892.] 'Saint Mungo' writes in your issue of this week, 'I much demur to the assertion that "A Renfrewshire Bee-keeper" has done more to promote successful bee-culture than any other gentleman in Scotland.' I have no objection to 'Saint Mungo' or any other correspondent quoting what I write, provided they do it accurately. What I wrote in the article you reproduced, and your readers can verify it by referring to your issue of 11th October, was, 'that most accomplished apiarian who has perhaps done more to promote successful bee-culture than any other gentleman in Scotland.' By leaving out the word 'perhaps,' 'Saint Mungo' makes me dogmatise. No one who knows the history of bee-keeping in Scotland need 'demur' to what I wrote, and I readily recognise the names of those quoted by 'Saint M.' as having done much to advance bee-culture in Scotland to the high position it now occupies. I dismiss this point by asking 'Saint Mungo' to read the advice given to 'Amateur Expert' on page 538.

The article I contributed to the *Kirkcudbrightshire Advertiser* was the sequel to something that went before, and as reproduced by you was not in its entirety. Some of it had more of a local reference, and another part of it could only be clearly appreciated in the light of what had already occurred.

Briefly, Borgue honey from time immemorial has enjoyed an extraordinary reputation, and practically the whole amount produced is bought by county and other wealthy families at high prices direct from the bee-keepers. In the spring of 1880 a controversy arose in the *Kirkcudbrightshire Advertiser* regarding the merits of Borgue honey, as apiarians from other districts questioned the superiority of the famous Borgue product. To induce competition I offered to add half a guinea to the first prize at Borgue show in the open class for dropped honey. This increased the value of the first prize to one guinea. The offer was accepted, and for three successive seasons wonderful displays of honey were made, competitors coming from Ayrshire, Wigtonshire, and Kirkcudbrightshire, and in each year the first and second, the only prizes, were gained by the Borgue product.

'Improved Bar Frame,' in paper above mentioned, put the position of Borgue very clearly when he wrote no outsider has ever gained a prize against Borgue at their show. Borgue apiarians have nothing to gain by going outside, as they already occupy the premier place, that there is already sufficient demand for the product at high prices, that Borgue honey is much prized by Her Majesty the Queen, by John Ruskin, and many other less notable persons.

I may mention that one of the judges arranged for last show was Mr. McNally, of Glenluce, but unfortunately he was unable to be present. I have rather a delicate palate for honey when granulated or candied, and Borgue honey imparts to that organ a *peculiar* and agreeable flavour that no other honey that I have ever tasted does. I have offered a guinea prize for the best answer to the query, To what is the peculiar excellence of Borgue honey due? The Borgue Society has accepted the offer, and are at present drawing out conditions of competition. Next season we may therefore look for something new and interesting on the subject.

I am not a bee-keeper, and cannot enter into any controversy on the subject. What I have now written is necessary information in view of 'Saint Mungo's' letter. —A. McN., *Greenock.*

AN EXPERIMENT.

[1893.] I this year successfully tried an experiment which I have no doubt will be of interest to your readers. Hoping against hope from week to week during our sunless summer that brighter days were coming, which, alas! they did not, I found myself in the month of August with no honey, and my hopes for the year blighted. I determined, therefore, as I could not get honey, I would increase my stock of bees. Having four stocks, I determined to divide two of them, but here came my difficulty. The bees had some time before given the drones notice to quit, and the period of grace had almost expired; indeed, in all but one instance, their homes knew them no more, and corpses were more plentiful than the living. The only hive with any drones was one which I did not desire to divide, inasmuch as it was one from which I had hoped of getting a little honey. I therefore selected two stocks which were driven bees last autumn, and which were moderately strong on ten-frames each. I am not sufficiently an 'expert,' but rather too much of an 'amateur,' to find the queen. I tried, but failed to do so, or I should, when dividing, have placed that half without the queen on the stand of original stock. However, I had to trust to luck. I placed empty hives close to each of the two hives I intended to divide, and took five alternate frames from each stock, and placed them in the empty hives, taking care to observe that there were 'fresh-laid eggs' in each lot. I then drew the frames of the old hives together, adjusted the division-boards in all four lots, wrapped all up nice and snug, and put a slow feeder in each, giving three holes, and waited results.

In the course of three or four days I made an examination of all four lots, with the result that I ascertained at once which halves had got the queen, those that had not having made numbers of queen-cells.

Those that had the queen I simply gave a frame each of comb, continuing the feeding with rather a more plentiful supply of syrup. I found that fortunately I had got one of the lots without the queen on the old stand. The other one, however, was not so.

My next care was to provide drones for the two queenless lots. I first inserted a piece of wood under the division-boards of each at the back, giving sufficient space for bees to pass under. Then I went to the hive with the drones, having a tumbler with a piece of glass over the top. I captured as many young drones as possible, putting them in the tumbler, and keeping them there with the piece of glass. I took these (about twenty), placed the tumbler on the floor-board of one of the queenless lots, just behind the division-board, and waiting for a quiet moment among drones, I quietly removed the glass, and quickly shut the lid of the hive.

This operation I repeated with the second lot. Not, however, feeling quite safe, as I feared I might have been deceived in the age of many of the drones, and that they might return to their own hives, I determined to beg some drones from a friend at a distance of a few miles, who happened to have a queenless lot with plenty of them. I repeated my operation with the tumbler, and waited results. The queen duly hatched out, and I found a dead one in the front of one of the hives. I took hope from this, judging that there was a fertile queen, who had killed the young princess immediately on her putting in an appearance. I understand that it is only in case one queen gets fertilised that the workers allow these fratricidal battles.

On making an examination a few days later, I was pleased to find eggs and brood in each hive. As this was getting well into September, I considered myself fortunate. I had been told that I was too late in the season to make a successful division, and felt proportionately elated. It is possible that I might have succeeded without manipulating the drones as I did, because there *might* have been some within measurable distance of me; but the great probabilities are that I should have failed, as it was so very late in the season. However, I consider that my plan ensured success, and that my experience may be of use to others.—H. P. D.

SHALLOW FRAMES.

[1894.] I have been much interested in the controversy as to the size of shallow frames, which some short time ago took place in your *Journal*, and was especially struck with the letter of one correspondent who advocated frames just half the standard depth. This seems to me to be the most sensible size of all. There are many advantages attaching to it, as set forth by your correspondent. Two frames will just go in the extractor; in doubling, too much space is not given at one time, too much space being one of the great disadvantages of ordinary doubling; there is no necessity for wiring the foundation, there being comparatively no risk of the foundation on these shallow frames breaking on extracting honey. I have tried them this year, and have every reason to be pleased with them. In using them I have put them in what are practically crates, $4\frac{3}{4}$ in. high front and back, and $4\frac{1}{2}$ in. high at the sides. This, with metal ends, leaves a bee-space of $\frac{1}{4}$ in. at the bottom (I left $\frac{3}{8}$ in. space in the first one I used, and found that the bees built in this width.) These crates can be worked just like section crates. Any number may be employed by using ekes to the hives. They may be made by a novice, and cost very little. Extracted honey may be easily obtained from skep hives, especially from inverted ones, and they are easily carried about and packed away. I don't see any difficulty in the fact that a great number of 6-in. frames are in use. It only necessitates a larger or smaller crate, as the case may be. Both sizes may be used on the same hive. A ten-frame hive, with ten-frame shallow crates, for half-standard size frames, cannot, in my opinion, be beaten, if extracted honey is the object aimed at.

I would suggest that these shallow frames be numbered, and kept in the same order whenever used. How often are bee-keepers troubled when reducing a hive to find that when part of the combs are removed, on drawing the remainder together, some of the combs touch one another! This, I fear, cannot be avoided in the breeding compartment, because it is usually contracted in winter and expanded in summer to meet the varying strength of the stock; but with these crates of shallow frames their order need never be varied, and there is no reason why, after being extracted, they should not be returned to their crates in the same order that they were taken out.

One result of using these shallow frames is that the bees in the brood-chamber use the cells quite up to the top-bar of the frames for breeding.

An advantage of using these crates instead of using shallow body-boxes is that they can so easily be removed from the hive for extracting purposes. A knife can be inserted between the top of the breeding frames and the crate; and even if the bees should have joined the bottoms of the shallow frames to the tops of the larger ones, they will by this means be easily loosened. On the other hand, when body-boxes are used, the flanges prevent this being done: and, in using force, you are likely to have an unpleasant spill.

I should like to hear again from your correspondent who advocated the half-standard size frames.—H. P. D.

ABSENCE OF WASPS LAST SUMMER.

[1895.] As a set-off against the number of insect plagues we have not had a wasp of any of the specimens which eat fruit and rob bees; and during the whole summer in all my walks I have only met with two solitary wasps. It will be curious to see if the race is actually extinct. It must take years to produce or establish these insects again if there are any left in other districts.—J. Ham, *Redditch* (*J. of Horticulture*).

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

Walter Chitty.—*The Uses of Honey.*—The paragraph to which you allude as 'copied word for word' from a contribution of yours to the *Housewife* was culled by us from an American paper with the authority stated as we have given it. We had an idea that we had seen the substance of it before, but the source to which we mentally attributed it was one of the former annual reports of the Berkshire B. K. A., evidently from the pen of the Rev. V. H. Moyle. We are very pleased to hear that your pen is so usefully employed in behalf of bee-culture, and we trust you may be long spared to use it to such good purpose.

R. Auld.—*Sugar Cake or Candy.*—The sample of cake forwarded is too hard for the purpose. The syrup when ready for stirring to convert it into candy should not be much stiffer in consistency than honey, and the finished candy should not be much harder than the hardest setting honey becomes in cold weather. There must have been some divergency in your attempt to follow the operation as in recipe.

E. A. Fry.—The sample of sugar forwarded would be found suitable for making syrup, but the time for syrup-feeding is past, and sugar-cake should now be used.

T. M. D.—1. The substance in the cells is pollen; there is no reason why the combs should not be of service in the coming season, and the pollen of the late summer may be returned to the bees next year. 2. The sugar would make serviceable syrup, but sugar-cake now is desirable.

H. K.—It has not been our privilege to have the necessary leisure to enable us to ascertain the number of journeys made by the honey-bee in one day in a good honey-flow in the midst of a white clover field.

I. C.—1. *Bees.*—The bees forwarded were fair samples of English black bees. 2. *More than one egg in a cell.*—This arises from a want of balance between the fecundity of the queen and the size of the colony. When the brood-nest is circumscribed, the paucity of the cells for receiving the eggs obliges a prolific queen to deposit more than one egg in a cell. There is no danger to be apprehended from this, as it probably has arisen from the fecundity of the queen.

R. W.—*Questions and Replies by a Girl eleven years old.*—We have been much gratified by the perusal of the replies given by your adopted daughter. They evince a singular precocity in so young a girl. The answers are generally correct, and sometimes very interesting and *naïve*, *e.g.*, the definition of a drone: 'It is a gentleman's bee, and the queen's sweetheart.' The best thing to be done if a bee shows signs of anger: 'Stare it straight in the face and stand still,' &c. We are much pleased to hear that she is also very quick in the manipulation of bees. We trust that her love to bees may strengthen with her years, and that her future may fully realise her early promise.

James Holme.—1. *Fertile Worker.*—No fertile worker can lay an egg which will become anything besides a drone, and it is a moot point if those drones have any virility. 2. *Average Honey Yield.* In a fair season and good location at least twice as much honey may be obtained from a frame-hive as from a skep, provided your *management* is right. The autumn, winter, and spring management constitutes an important factor in the success of the honey harvest. 3. *Number of Bees in a Pound.*—About 5000. Your other question has no value.

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Established 1874.

President: THE BARONESS BURDETT-COUTTS

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Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

MINORCAN BEES.

In July last we announced that, through the kindness of Mr. F. C. Andreu, there was a probability that the qualities of Minorcan bees would be tested in England. The queen, which was transmitted to Mr. Abbott, was safely introduced, and we have a further report from him in August that the queen had done well, and that he had been able to raise a number of young queens; but, owing to the bad season, there had been a difficulty in getting them fertilised, only one out of fourteen raised proving fertile; also, owing to the weather, although Mr. Abbott had induced the queen to lay a large number of eggs in drone-cells, he could not persuade the worker-bees to rear the larvæ, although they were well supplied with food. Mr. Abbott does not enter into the merits or demerits of the Minorcan race, as they have had no chance at present of showing what they are. Our correspondent, Mr. F. C. Andreu, had stated they resembled Carniolans, but it will be seen from a letter in our columns this week (to which we direct attention) that he corrects his former statement. He also alludes to what M. Bertrand says in respect to these bees in the *Revue Internationale*. We have had an opportunity of seeing these bees and found them different in appearance to Carniolans, resembling more closely our common bees, except that they are much darker, almost black, and appear to have a more glossy surface. We cannot say much for their temper, which appears very different from that of Carniolans. They seem much more irritable and inclined to sting. Of course there will be a difference in various colonies in this respect, and, like Cyprians and other stinging races, those hives containing the youngest bees will be the quietest. That they are very free with their stings we have abundant evidence, although we have not ourselves felt the sting is a mild one like that of Carniolans, or a virulent one like that of Cyprians and Syrians. Mr. Andreu assures us they are mild in disposition and easily handled.

When we examined the bees a short time ago, it was on a cool day, and as soon as the quilts were removed we found that, whilst the other races of bees were all snugly and compactly clustered, and that they were hardly stirred by the disturbance, the Minorcan bees were spread over the combs, were much more vivacious, and flew out to resent the intrusion. Numbers of bees ran out at the entrance, whilst with the other bees not one was seen to leave that way. A smoker was not used in either case, so that all had the same treatment.

We were much interested in the peculiar barricade constructed in front of the entrance, and which we found quite different in appearance to anything we had seen before. The barricades were built up apparently of the usual materials, viz., propolis and wax, and extended the whole length of the entrance, which was about 8 inches long. We have seen bees build barricades to protect themselves against robbers and also the death's-head moth, but in such cases the inside of the entrance is filled up with propolis and wax, and a hole left here and there just as the bees seem inclined. In these barricades there is a regularity that is most beautiful, and has called forth the remark from one correspondent that 'they seem for all the world the work of engineers learned in the art of self-defence.' In this case the barricades form a regular trellis, each hole being nearly $\frac{1}{4}$ of an inch wide, or just large enough to allow a bee to pass, and having an upright bar of about $\frac{1}{8}$ of an inch wide between each hole. The illustration will give an idea of the structure. When we first heard of

these barricades the idea at once occurred to us that they were probably intended to keep out the rose-beetle (*Cetonia aurata*), very common in the South of Europe, and that the habit was probably inherited.

We are told that in Minorca the practice is common for the bees to systematically and scientifically barricade the entrance in the autumn. It is very interesting to find that the bees when first transported to another land carry on the same practice, for this was the only hive in the apiary that had built barricades. We think it shows that the habit is inherited and transmitted from one generation to another, because there is a use and necessity for it. As the bees are possessed of a certain amount of intelligence we shall expect to

find that they will drop this habit when they find they have not the same need for their barricades in their new circumstances. With us the rose-beetle is not so plentiful that it should be reckoned as an enemy of bees, and therefore shall expect that the bees in time will abandon the barricading. They will not probably do so at once, but may take several generations before they entirely give it up. Of course, if the race is crossed the habit would probably be bred out very rapidly. We should be glad to hear whether the Minorcan bees reared by Mr. Abbott and other gentlemen have been noticed to possess this peculiar characteristic. We do not think the bees have been tried long enough out of their native country to speak positively as to their good or bad qualities; at any rate the past season was too bad to give them a fair chance.

WITH THE AMERICAN BEE-KEEPERS.

By Thomas B. Blow, Welwyn, Herts.

Watertown, Wisconsin, U.S.A., Nov. 4.

You very kindly notified that I was going over to this side of the water by the S.S. *City of Rome*, and the same fact was mentioned by the bee-papers over here—the *American Bee Journal* and *Gleanings* especially. I think also that I am indebted to the kindness of 'Amateur Expert' for some of the very cordial invites that I got from some prominent bee-men with whom he corresponds, and to whom I imagine he had written about my visit. However, on my arrival here I got a big pile of letters of invite, to the senders of which I here accord my hearty thanks, and did time allow I would visit all. But six weeks have passed, and I have made but few visits; and as I am bound to be back again in England before Christmas, I must soon again turn my steps towards the rising sun. My journey was begun under good auspices. At any time it is depressing to start on a very long journey with no friend to say a parting word, but especially it is so on an ocean trip among a crowd of over a thousand, all strangers. My delight, therefore, was great when I saw the face of my old friend, W. B. Carr, to welcome me at Lime Street Station, Liverpool. He had come to see me off, and we went on board together, and he remained till the cry was heard, 'Any more for the shore!' and with a hearty shake of the hand, and best wishes for the success and pleasure of the journey, he bade me good-bye.

The voyage across was not a pleasant one. Two days of fine weather, and the remainder a succession of storms; added to which a breakdown of the machinery and three deaths, did not tend to enliven our spirits. The view on entering New York Harbour is beautiful in the extreme, well-wooded hills all around, with fine mansions and villas dotted here and there among the trees. We arrived quite early in the morning, before the electric lights were extinguished; and the view of the big Brooklyn Bridge, with its hundreds of lamps, and the gigantic electric torch borne aloft by the hand of the statue of Liberty, were very striking. Having a few hours to spare before train time, I spent it in seeing the sights of New York, under the guidance of Dr. Waxham, a Chicago physician, whose acquaintance I had made on board. We journeyed together to Rochester, where was my first stop. Here I had to visit some relatives that I had never seen, an uncle and aunt who had been out here fifty-nine years, and a family of nine cousins; so you can well imagine the hearty welcome I got from all these, who were assembled at the station to meet me, the first relative they had seen for fifty-nine years! While staying here two or three weeks I drove round to look up the various local bee-keepers. They were principally farmers, who were not very advanced men, but the foremost among them was Mr. A. H. Gridley, of North Chilli. I may say that all this county (Monroe) is a perfect garden—fruit, flowers, and vegetables in profusion everywhere, peaches, grapes, apples, pears, in the greatest plenty. Mr. Gridley's place was in a charming spot surrounded by orchards, and I found him busily harvesting his apples and packing them in barrels, some of them, such as Baldwins and New Town pippins, to go to Europe. He had some fifty stocks of bees, all in the ordinary Langstroth frame-hives that are in such general use here, severely plain and simple in all their details, everything for use, nothing for ornament, not even paint in some cases; and I ventured to remark that we would keep our hives better painted, and Mr. Gridley said he would when he got time, but as labour is so dear here he had to do all he could himself, and so the bees got a bit left, especially in a season when they did not pay. He had nothing to show in the way of honey, as this season had been a complete failure, the same as with us in England. All the hives were supered, but Mr. G. had not troubled to remove the partly filled sections—he would let the bees take the honey down and save the feeding. We looked through a few hives and found the stocks were simply grand, but all in need of food to take them through winter. I mentioned the price we paid for sugar, and found that here it was 8 or 9 cents the pound—4*d.* to 4½*d.* of our money. This I learned was the result of the Protective tariff. It seems that sugar is heavily protected, and as a result in nearly all the industries that are thus shielded gigantic trusts are formed, and the price kept up to the highest possible price by agreement. The sugar trust, Mr. G. said, was a great monopoly, and every consumer was thus compelled to pay to the support of a wealthy body of capitalists, and on the bee-keeper in a bad season it presses with great hardship. There are many other branches of trade controlled in the same way, and the great question at the coming election (Tuesday next) is Protection *v.* Free Trade, and the people here seem determined to put an end to what has become simply a shameful oppression.

Colonel Waterson, one of the prominent Democrats, spoke here last night to an immense audience, and brought forward some of the most unanswerable arguments in favour of Free Trade I ever heard, and they were well received. My host being a well-known Democrat here we were courteously invited to seats on the platform, and thus had the pleasure of hearing a really fine address.

Owing to the hot weather which prevails in the summer, Mr. Gridley lifts all the bodies from the floor-boards all round by four little wedges, so that the ventilation is very ample. Two devices of his may interest. 1. His method to prevent increase of stocks by swarming, and this is what many wish to do in England. He allows one stock to swarm (of course it is well known that if the swarm was returned it would issue again next day). When the next swarm issues he unites this swarm to the stock that has already thrown the swarm, of course first cutting out the queen-cells that may be there. By adopting this plan he finds that with certainty the swarm will not re-issue, and so he goes on the whole season, and the only increase in his apiary for the present year has been the one first swarm. 2. To prevent second swarms or casts. Take the first swarm and hive it, and place this swarm and hive on the spot that the stock from which it issued stood, and remove stock anywhere within twenty or thirty yards. This stock so removed will not send out any second swarm. These plans, he states, invariably answer well, and I therefore

mention them. He was inclined to favour Italian bees, but had heard much about the Carniolan and would like to try them, but it was so difficult to get the real, genuine article over here. Talking of the disposal of honey, he said he never had any difficulty in disposing of it at fair paying prices.

(*To be continued.*)

GLEANINGS.

The *Journal of the Royal Microscopical Society*, says M. L. Cuénot, after some remarks on the general composition and function of blood, gives a brief account of his observations on various groups. In insects the liquid of the cœlom contains a dissolved albuminoid, varying in colour, which has both respiratory and nutrient functions. In the blood there are a number of typical amœbocytes, which are produced by a large gland which completely surrounds the heart, and even extends over the alæform muscles; this gland is formed of a connective stroma filled with nuclei and fine granulations. These nuclei gradually surround the albuminogenous ferment and escape from the gland. This lymphatic gland is found in the larvæ as well as in the imagines of all orders of insects, with one single exception.

In his *Observations on the Embryology of Insects and Arachnids*, A. T. Bruce finds that the antennæ of insects are shown by their innervation to correspond to the first pair of crustacean antennæ; the bilobed upper lip of insects is innervated from the second division of the supra-œsophageal ganglion which forms part of the circumœsophageal commissure. He regards the antennæ of insects and crustacea as probably homologous structures which ally the two groups.

In the *American Apiculturist* J. S. Biddle says:—'Buckwheat affords a honey harvest when all other honey blossoms have appeared in their season and vanished away. This cereal can be sown at different dates, affording a successive honey resource until the frost of autumn asserts its sway. A peculiarity of its blossom is, that bees can only gather from it not later than the middle of the day, unless the weather is damp and no sunshine. Some seasons it yields an immense quantity of honey, other seasons it yields but very little; its honey is a darkish colour, but its peculiar and very rich flavour makes it a favourite of very many persons who are not won by appearance alone; not always is the lightest-coloured honey the best. Many experienced bee-men claim that buckwheat honey is the best on which to winter bees. This is my experience. Along the base of the Alleghany mountains, in this country, I learn from men who have paid attention to bees, that they experience very little trouble in wintering their bees. In that same locality there is always an extensive crop of buckwheat sown.'

In the *Bienenwirthschaftliches Centralblatt* Dr. Sonder says that there are more colonies of bees in Schleswig-Holstein than in any other province, there being one hive for every eight or nine of the inhabitants. In Switzerland there is one hive to every thirteen or fourteen inhabitants.

In the *Farmer's Advocate* R. F. Holtermann does not recommend feeding the bees on syrup in the autumn, but says they must be got ready for winter early—in fact, the preparation should commence in summer, and as the brood will often not permit the storing of sufficient honey below, reserve two or three combs of good honey well capped, and have these to fall back upon in every hive, if they do not have the proper quantity on October 1st. Take out combs free from brood and with the least honey, and put in the combs of sealed honey. He says it is a bad plan to feed as it wears the bees out, as a honey flow does, and leaves them aged for winter; there is also a great waste by the bees in placing their stores in the hive, to say nothing of the bad impression that your neighbours get, if you bring home sugar to feed your bees, and they, of course, at once say that you are 'making honey.'

In the *Canadian Bee Journal* C. W. Demaree says he has discovered a new plan to so strengthen sheets of foundation that they will hold up swarms without the assistance of the wire nuisance. If you cut a sheet of foundation in two and then lap the edge about one quarter of an inch and weld the edges together with a stiff putty knife in the same way that the sheets are secured to the top bars by the mashing process, the thick rib in the centre will prevent the sheet from stretching or sagging, and the bees will work right on over the rib and make the combs as perfect as if no thick rib was in the way. He sees no reason why the rolls of a machine could not be fluted in the middle so as to forge the ribs in the centre up the whole sheets; of course, this would require long rolls, as the sheets would have to pass through the mill lengthwise instead of the narrow way as now practised.

In the *Revue Internationale d'Apiculture* M. Bertrand says:—'It is well known that bees gather aphidian honey, although all honey-dews are not the produce of aphides. But the sweet substances produced by the aphides are not, properly speaking, evacuations, in the sense that this word is usually understood; that is to say, that they pass out of the body of the insect by special organs, situated on each side of the abdomen, and not at the extremity. They are a sort of conduit which extend more or less according to the species, beyond the exterior of the body, and are not a continuation of the intestine. Many scientists believe these organs to be prolonged spiracles, that is to say, according to them, they would form part of the respiratory system. Aphidian honey-dew, therefore, is the sap of plants which has undergone a slight modification in passing through their body, somewhat like bees' honey (if it is not wicked to suggest such a comparison), and it is not faecal matter. Aphides are winged insects, which, like the bees, have the right to make honey to feed their young, as some believe, or for some other reason not yet known.

In *Comptes Rendus*, Mr. G. Carlet continues his notes on the poison of Hymenoptera. In those with a smooth sting, like *Philanthus*, *Pompilus*, and others, the alkaline gland, like that which the author has already shown to be well developed in the bee and others, in these is rudimentary. In these hymenoptera the incomplete poison does not kill the insects with which they provision their nests. He has already shown that the poison of bees consists of an alkali and an acid, and it is his opinion that it is the presence of two liquids or of one only which produces respectively the mortal poison or the anæsthetic, and not the asserted power to select the part of the body at which the insect will sting its victim. In the Mellifera only is found a poison-chamber which furnishes poison, while it protects the poison from the air, which would alter it. It is correlated with the parts which form the stinging apparatus of these insects.

In the *Revue Internationale* M. Woiblet recommended honey as a remedy for warts on the hand. He noticed that a person having warts, after washing the hands for several consecutive days in honey and water, lost these excrescences. To assure himself of the efficacy of this new remedy, M. Woiblet tried it on a child who had a large wart in the palm of the hand. He applied pure honey several times, and in a few days it had entirely disappeared. Since then M. Desquartiers has tried the same remedy on a child whose hands were covered with these warts, which were very disagreeable both to the sight and touch. Although the remedy was applied very irregularly, in a few weeks they entirely disappeared. He says the treatment is very simple: at night the hands are rubbed with honey, and then gloves are put on for the night. This remedy is less costly than the drugs hitherto employed.

THIRTY YEARS AMONG THE BEES.

By Henry Alley.

INTRODUCTION.

Had any one predicted thirty years ago that the rearing of queen-bees could have been made a special and profitable business by any number of people, he would have been considered insane; perhaps so much so as the one who dares predict anything concerning the possibilities of future bee-keeping. Nevertheless, there are at the present time more than a score of people who devote nearly all of their time to the production of queen-bees.

Thirty years ago but few bee-keepers understood the art of queen-rearing by *artificial* methods. No one had written a book upon this interesting branch of apiculture, nor could but few bee-keepers be found who had had even the most limited experience in the art of rearing queens.

The fact that there never had been any demand for queen-bees is the reason why queen-rearing was so little understood in days gone by. It may seem strange to the younger bee-keepers for me to say that there has been no greater advancement made in queen-rearing than there has been in the methods for the production of honey, either comb or extracted; also in hives, and, in fact, in all branches of bee-culture. If the same advancement continues for thirty years to come that has been made in the past thirty years, no one can predict what is possible in apiculture.

Queen-rearing is a subject in which all bee-keepers are more or less interested. How to produce queens, first-class in all respects, by *artificial* means, is a question that has long attracted the attention of the prominent apiarists of the world.

Having made queen-rearing a special study, and my sole business for more than a quarter of a century, I hope to be able to throw some new light upon the subject, as the result of my long experience in this particular branch of apiculture.

In order that we may be successful in the production of honey it is of vital importance that our queens are first-class in every respect. To rear queens by the 'forced or artificial' methods, as it is called, requires many years of practical experience. It is true that one, even with limited experience with bees, can give a piece of comb containing brood or eggs to a queenless colony, and thus rear queens; but this is not queen-rearing by correct, practical, or by proper methods.

He who can rear queens to equal those produced under the swarming impulse has much to boast of.

Nearly thirty years ago the writer began to rear queen-bees and ship them to bee-keepers in all parts of the country. With each year of active and practical work in the bee-yard, I have gained a fund of knowledge and experience in bee-keeping, and especially of queen-rearing, that but few people are likely to attain; certainly such as few people will ever achieve without first devoting years of labour and hard study to accomplish. Queen-rearing, and bee-keeping generally, is a most fascinating pursuit, and when a person once engages in it he seldom gives it up wholly.

The reader must not suppose that the writer is an *old* man because he has had so many years' experience in queen-rearing. Though well advanced in life, he hopes to be with you for many years to come. I began bee-keeping at the age of twenty-three years, and queen-rearing on a small scale was one of my first hobbies. I had kept bees but a few years when the introduction of the Italian bee created so much excitement throughout the world. At that time a demand for Italian queen-bees sprang up, and several parties beside myself commenced rearing them to supply the trade. Since that time—somewhat over twenty-nine years ago—I have given my whole time to this branch of bee-keeping.

With the above brief introduction, I will try to explain the several methods for rearing queens that have been practised in the Bay State Apiary since its establishment. Any of the methods given will be found practical, and may be relied upon by those who use them for producing queens that are equal to those reared in full colonies under the swarming impulse.

How to Rear Queens.—We will now suppose that the reader has had a proper amount of practical experience in the early branches of bee-keeping to fit him for queen-rearing and is ready to take up this branch of bee-culture and attempt to make it a success.

Those who intend to make the rearing of queens a business will find it necessary to commence early in the spring, to prepare the colonies for cell-building. Here let me say, that unless one can have queens ready to ship as early as May 20th, or certainly by June 1st, he should not attempt queen-rearing as a means of livelihood.

In the north there is but one way to get colonies in the swarming condition as early in the season as is desirable, and that is, by *liberal* feeding. This will, of course, stimulate the bees to brood-rearing. The proper time to begin feeding is when the bees commence to carry in pollen.

I have found that the best way to feed in the spring is to use a wire-cloth honey-board (described on another page), and have also discovered that powdered sugar—the same as confectioners use to frost cake—and honey mixed, say twenty-four ounces of honey to five pounds of sugar, is an excellent food for stimulative feeding. The mixture should be thoroughly kneaded and worked about the same as a good bread-maker prepares the sponge for a batch of bread. When the food is ready, raise the cushion and place it on the wirecloth directly over the cluster, and cover up warm. The bees will soon take all the food through the wire and place it in the combs. About one pound of such food should be used each week.*

I am partial to the double-walled hive for obtaining large colonies and rapid increase early in the spring.

Those colonies that have wintered in the best condition should be selected to rear the first queens.

When the bees begin to gather honey from natural sources, any further feeding will be unnecessary and should be discontinued. By May 5th to the 10th, the colonies fed should be strong, and have the appearance of being ready to swarm. The winter packing should not be removed, however, until the sections are placed on the hive, and that should not be done until there is plenty of forage for the bees and the weather is quite warm. The entrance to the hive should be kept contracted to about two inches for the largest colonies. This will prevent the escape of heat from the brood-chamber. I like to keep the interior of the hive as warm as possible. If the combs of a colony that has been treated as above for several weeks are examined, they will be found full of brood in all stages. There should be more or less capped drone-brood, and perhaps some drones. This is just the condition in which a colony should be before it is used for cell-building.

The Selection of a Queen-Mother.—Now we have reached a point where all is ready to commence queen-rearing, and I will mention some of the qualities and give some of the points that a queen should possess

* If queens are not to be reared until after the honey harvest has commenced, no such preparation as given above will be necessary, and the method for rearing queens in full colonies without removing, or caging the queen, will be found the most practical one to use after the 20th of May and up to the end of the honey harvest. This method will not be given here nor will it be made public. It is my intention to publish it in pamphlet form and present a copy to each purchaser of this book, and to each subscriber to the *American Apiculturist*.

that is to be used as a queen-mother. All experienced bee-keepers know the importance of having a strong, vigorous mother-bee. It will be understood, of course, that the breeding queen should be carefully selected, and thoroughly tested the previous season, in order to determine her qualities regarding purity and other desirable points. In selecting a mother-bee, I make it a point to select the largest and finest formed, as well as the brightest coloured queen in the apiary. Special regard is paid to selecting for gentleness, prolificness, and good working qualities. Purity is determined by selecting only those queens whose worker progeny is uniformly marked. Such queens can be depended upon to duplicate themselves in handsome, golden-coloured, royal progeny every time.

Never select a queen whose workers are poor honey-gatherers, as queens from such mothers will not be first-class in any respect.

How to Obtain the Eggs for Cell-building.—I cannot rear queens on a large scale and draw the eggs from full colonies as most queen-dealers do, and advise others to do. There are many disadvantages and objections to such a practice. The life of a queen is endangered every time a hive is opened and any of the combs are removed. Even if the queen is not killed by being jammed between the combs, she is liable to be 'balled' to death. When a hive is opened, the bees, and more especially the queen, is more or less excited, and at such times the bees are apt to destroy their own queen.

Then, again, it is a difficult matter to find eggs in a full colony, in any desired quantity, and in the right condition for cell-building at any time one desires to start cells. The plan recommended by most breeders of queens is to insert a clean, new comb in the centre of the brood-nest of a full colony, and in the course of a few days the comb is removed, and after cutting more or less holes in it, it is placed in a queenless colony, when a number of cells will be built about the apertures thus made.

While such a plan may do for rearing a few queens, I think it very objectionable if one hundred or more queens are to be reared. To obviate all danger of killing any valuable breeding queens, I find it the best plan to keep the mother-bee in a small hive, similar to the one illustrated in Fig. 1. The dimensions of such a hive as I have used for many years are as follow:—Depth, six inches: width from side to side, eight inches; and from front to rear, six inches. This is inside measure. Five frames are used in the hive. These hives are made of seven-eighth-inch thick boards for durability. When the colony is made up, two combs of honey, two of brood, and one empty comb, are used. The frames of honey are placed at the sides, then the brood, and, lastly, the empty comb is placed in the centre. About three pints of bees and a queen are then put in the hive. The queen will deposit her first eggs in the empty comb. Three days later those eggs will be at the proper age for cell-building.

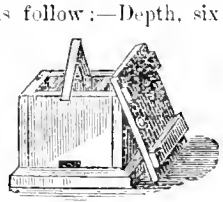

Fig. 1.
Hive for breeding queens.

A comb that has been used for brood once or twice is rather the best to use for cell-building, though most any comb will do when prepared as described further on.

About one week previous to the time of commencing queen-rearing is the proper time to prepare a hive for the breeding queen, as she should be in the hive several days before any eggs are taken from the colony, and the bees allowed time to get the hive in order for the work of the season. After one or two combs have been filled and removed, the colony will be in condition to furnish one comb of eggs each day during the season. If the queen is what she should be, every cell in the frame will have an egg in it. I make it a rule to remove that comb every night, and insert another one in its place. After marking the date of the month on the top bar, it is then placed in a queenless colony specially prepared for the reception of such eggs. Here the eggs are nursed and cared for until they are wanted for cell-building. It would not do to place such combs in a colony having a fertile queen, as she might find a few cells that had no eggs in them, and at once deposit some. Under such circumstances there would be an uncertainty as to which queen the cells when built would belong.

Advantages of using such Hives.—The advantages of using such small hives from which to obtain the eggs will be seen at a glance. Some of them are these: 1. It is not necessary to open a full hive when eggs are wanted. 2. The exact age of the eggs is positively known, and one may know when to prepare his bees for cell-building, and the exact time when the young queens will appear. This is one of the most important features of my method of rearing queens. Every movement connected with queen-rearing should be so systematical that no mistakes can occur. By my system of getting eggs for cell-building and rearing queens, it is impossible for the bees to build cells from anything but eggs or very young larvæ. There is no guess-work or loop-holes left open for mistakes of any nature.

Preparing the Bees for Cell-building.—At this point every preparation is complete for queen-rearing. The colonies have been forced up to the swarming-point and the eggs are at the right age from which to start cells. The next move is to select the colony for the work and remove the hive to the bee-room, where everything has been made convenient and comfortable for doing the work that must be done to fit a colony of bees for cell-building.

Just at this point not only is there needed a convenient room in which to do the work, but several other articles should be at hand; among them a wire-screen, used for fastening the bees in the hive. A small broom, for brushing the bees from the combs, is one of the most convenient things in the apiary; also a box that will hold three pecks at least, and having a top and bottom of wire-cloth. For convenience, this box will be called the swarm-box. It is used merely to confine the bees, for a few hours, while they are being put in condition for cell-building.*

When the bees have been removed from the combs they are placed in the swarm-box to remain from one to two hours or until they are in a proper condition to accept eggs from which to rear queens.

In the previous editions of the *Bee-keeper's Handy Book* I gave directions and advised keeping bees intended for cell-building in a queenless state and confined in the swarm-box ten to twelve hours. Experience has shown that bees that have been in a queenless state but a few hours will destroy eggs prepared for them for rearing queens by my former method. Hence the necessity for keeping a colony queenless so long a time before eggs are given them; but, after practising this method for several years, it occurred to me that it would be an easy matter to obviate the necessity of the long confinement of the bees in such small quarters and so long a time as ten hours, and I was prompted to test the following experiments.

(To be continued.)

—*The American Apiculturist.*

REV. L. L. LANGSTROTH.

Lorenzo Lorraine Langstroth had his birth in Philadelphia, the 25th of December, 1810. Born in the 'City of Brotherly Love,' how worthily he has acted to maintain the reputation of his natal city! How few men

*All the articles used in my methods, and in the Bay State Apiary, will be described farther on. Also a room in which to handle bees as I think one should be arranged.

exemplify more of brotherly love in their everyday life! As a child, Lorenzo was passionately fond of insects. Even now he grows eloquent as he tells of the pleasure he had when a boy in watching ant-hills, and in searching out other insects and studying their wondrous habits. His parents, though intelligent, well-to-do people, did not encourage this seeming 'waste of time,' and so, instead of encouraging his thirst for study from the grand Book of Nature by a show of interest or words of approval, and by supplying books devoted to natural history, they repressed this desire to know God by the study of His handiwork. It seems strange to us now how parents can see that anything but good can come from a study of the pure and true, as Nature writes it on all her pages.

At the age of seventeen Mr. Langstroth entered Yale College, from which institution he graduated four years later. Those of us who have admired the classic diction of his great work, the *Honey Bee*, have listened to his reading from Virgil and Columella in Latin, and have heard him eloquently explain his invention and methods of work, need not be told how industriously these college years were spent. Neither are we surprised to know that he was thought competent to teach in the great college from which he had received his education. He was two years Tutor of Mathematics at Yale, and entirely sustained the expense requisite to a theological course which he took at his *alma mater*.

In May, 1836, he was ordained pastor of the Old South, or Second Congregational Church, at Andover, Mass. Eloquent, learned, studious, devout, full of that love which 'esteemeth others better than oneself,' it goes without saying that Mr. Langstroth was a successful pastor in the best sense of that word. In the same year, he married Miss Anna M. Tucker, of New Haven, Ct., by whom he had one son and two daughters. Many of us remember what a faithful helpmeet he secured. During the severe illnesses of her husband she carried on his very arduous and extensive correspondence as only an unusually competent, dutiful, and loving wife could do. The beauty and painstaking accuracy of the business letters written by Mrs. Langstroth showed full well that her husband had secured that best of life's blessings—a good wife. Mr. Langstroth often says that he owed more than he could tell to his devoted and accomplished wife.

A year after Mr. Langstroth's settlement in Andover he was incited, by the sight of some exquisite comb honey in a glass globe, on the table of a friend whom he was visiting, to investigate the latter's bees, which were kept in the attic. His delight was exceedingly great, and nothing could stay his ardour and enthusiasm, now at white heat, till he had secured two colonies of bees, which, of course, were in box hives. His only bee-books were Virgil and an American work, whose author, at this time, doubted the existence of a queen-bee.

Two years later, 1839, Mr. Langstroth's health became so impaired that he was obliged to relinquish his pulpit. He then removed to Greenfield, Mass., where he gave his attention more and more to bees. His thirst for knowledge on this subject led him to seek light everywhere. Soon the works of Bevan and Huber fell into his hands, and there was opened a new world before him. From this time on he gathered industriously the works of foreign and American writers on bees and bee-culture, till now he has one of the finest apiarian libraries.

Soon after relinquishing his pastorate in Andover Mr. Langstroth was chosen principal of the Abbott Female Academy in that place. Subsequently he was elected principal of the Greenfield High School for young ladies, and was for five years pastor of the Second Congregational Church in Greenfield. His health again compelled him, in 1848, to resign his pastoral charge.

In 1848 Mr. Langstroth opened a school for young ladies in Philadelphia, where he began more earnestly to investigate the habits of bees, and to experiment with hives, which led to his great invention, *the Langstroth moveable frame hive*, which was devised in 1851. Mr. Langstroth has shown me this important sentence from his journal of October 30th, 1851 (recorded on the very day that he devised his plan for using a moveable frame):—'The use of these frames will, I am persuaded, give a new impetus to the easy and profitable management of bees.'

In regard to this invention, which was to bee-keeping what the gin was to the cotton industry, I quote from my *Manual*, ninth thousand, page 283:—'In 1851, our own Langstroth, without any knowledge of what foreign apiarian inventors had done, save what he could find in Huber, and the edition of 1838 of Bevan, invented the hive now in common use among the advanced apiarists of America. It is this hive, the greatest apiarian invention ever made, that has placed American apiculture in advance of that of all other countries.' Mr. S. Wagner, than whom, from his wide knowledge of all apiarian literature, no one was better able to judge, in speaking of this invention, says, 'When Mr. Langstroth took up this subject, he well knew what Huber had done, and saw wherein he had failed—failing, possibly, only because he aimed at nothing more than constructing an observatory hive suitable for his purpose. Mr. Langstroth's object was other and *higher*. He aimed at making frames moveable, interchangeable, and practically serviceable in bee-culture; NOBODY, *before Mr. Langstroth, ever succeeded in devising a mode of making and using a moveable frame that was of any practical value in bee-culture.*' Probably no one was more conversant with this whole subject than Mr. Wagner. He was thoroughly informed as to German, French, and English bee literature and methods. His statement should then and there have set at rest all question and controversy; and it would, had not greed, selfishness, and dishonesty, prompted men to reap where they had not sown.

Langstroth on the Honey Bee was first published at Northampton, Mass., in May, 1852, and in its preparation for the press, our American Huber, like the other Huber, was greatly assisted by his wife. It was revised in the year 1857, and again in 1859, since which time it has not been revised, though many thousands of volumes have been published and sold. This work is really a classic. Its admirable style, clear and accurate descriptions, exceeding thoroughness and completeness, and its perfect candour, honesty, and ingenuousness, made it a favourite with all who studied its pages. Had apiculture stood still, and science slumbered, no second work would have been needed. Every bee-keeper will rejoice that persons having such wide knowledge and practical skill as Messrs. Charles Dadant & Son are revising this great work. In 1858 Mr. Langstroth removed to Oxford, O., where with his son he engaged in the rearing for sale of Italian queens. His apiary was large, and his sales in a single year reached the sum of $2000, which at that time was something astonishing.

The death of his only son in 1870, and of his wife in 1873, a severe form of head trouble, which often wholly incapacitates him for mental or bodily exertion (one attack having lasted for two years), together with a serious railroad accident, compelled Mr. Langstroth to sell his apiary in 1874; but he has seldom been wholly without bees.

We regret to say that Mr. Langstroth never received any considerable reward from his great invention. Its great value was at once recognised, but, through infringements, others reaped the reward which rightfully was his. These infringements led to litigation which swallowed up even the gains that had been received. This whole matter is the dark page in American bee-keeping history, and we gladly pass it by without further comment.

Those personally acquainted with Mr. Langstroth are aware that he is a very superior-looking man. His physique is large and fine, his face kindly and intelligent, while his broad culture, pleasing manners, and delightful social characteristics, make him a charming companion. He is loved and venerated by American bee-keepers, not only for what he has done for them, but also for his beautiful character and genuine personal worth. Happy are we that he who is both our Huber and Dzierzon is not only worthy of all respect and admiration for what he has *done*, but even more for what he *is*.

In 1887 Mr. Langstroth removed to Dayton, Ohio. His home is with Mr. H. C. Cowan, who married Mr. Langstroth's eldest daughter, and their seven children add much to the comfort and enjoyment of his declining years.—A. J. Cook, *Agricultural College, Michigan, (American Gleanings).*

KENT BEE-KEEPERS' ASSOCIATION.

The October Meeting of the Council of the Association was held, by kind permission, at the rooms of the Royal Society for the Prevention of Cruelty to Animals, Jermyn Street, London, on Wednesday, the 31st ult., at four o'clock in the afternoon. The attendance of members in more numbers than of late showed that the experiment of holding meetings in London was likely to be more successful. Mr. Hooker was voted to the chair.

Letters were read from members who were unable, from various causes, to be present. The Secretary informed the meeting that no meeting of the Council had been held since that at Sittingbourn on February 29th, and therefore the executive officers had become responsible for the work done as well as for that which had been left undone. The usual notices were sent out for the April meeting, fixed to be held at Ashford, but, as the Treasurer and Secretary were the only members present, the result was abortive. The work of the Association had been carried on on the lines previously laid down.

The spring tour of the Expert had been carried out; the bee tent had fulfilled two engagements, one of which was on entirely new ground, namely, at Minster, in Thanet; the other being at Staplehurst. Prizes for honey had been given at the Lydd Horticultural Show, and the Cottagers' Apiary Competition at Hawkhurst had been repeated.

The hon. treasurer, in forwarding his financial account, which showed an available balance of *21l. 18s. 7d.*, took the opportunity of announcing his intention of resigning his office at the end of the year. This intimation was received with very great regret by all the members present, and the Secretary was directed to urge a reconsideration of a step which, if taken, would be greatly injurious to the Association.

The Apiary Competition at Hawkhurst attracted seven cottager members to a friendly rivalry, and in spite of the disappointing character of the season, their efforts to secure the honours were maintained with full energy to the end. The competitors were John Collins, to whom the first prize was awarded; Frederick Reed and James Hicks, equal second; W. Blake, third; W. Campany, J. Marchant, and J. Humphreys. The yield of honey was remarkably small, the maximum quantity in any instance not exceeding nine pounds, whereas last year it exceeded in several instances fifty pounds per hive. The judges, of whom Mr. Hooker was one, found much pleasure in carrying out the duty entrusted to them, and bestowed much praise upon the admirable manner in which the apiaries, with one exception, were managed.

It was decided that the next meeting of the Council should again be held in London on December 5th.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

COUNTY ASSOCIATIONS.

[1896.] From the perusal of many of the late issues of the *B.B.J.*, it will have been evident even to a casual reader that there is something wrong in the management of County Associations to account for the decease of some and the apathetic state of others, and also with regard to the connexion of British and County Associations.

That all County Associations are not in as flourishing a condition as might be wished will be generally conceded, and the question arises, Why do they not work well, and what suggestions can be given for their improvement?

I quite agree with Mr. Seager and Mr. Grimshaw that affiliated Associations should not necessarily be County Associations. I have several times recommended the amalgamation of Hunts and Cambs, because I believe that under existing circumstances there would be more probability of success than there now is with each a separate Association. The secretaryship of Hunts Association has gone begging nearly a year, and while in Cambs the Secretary sticks to office, the members are falling off. Recently I had a request to give advice in forming a branch of the B.B.K.A. at Willingham, and I have promised to give them a lecture and advice *re* affiliation to-morrow. Too much space would be taken up to fully explain suggestions for the improvement of the Associations, but I believe failure in several cases must be attributed to the fact that, what at starting has been named as one of their main objects, assisting in the disposal of members' produce, has been persistently neglected, and until Associations individually take up the question as Berks B.K.A. has done, and deal with it as they think best for the benefit of the members, they will lack the sympathy of those they profess being desirous to benefit.

Briefly, the *first* requirement is a good energetic Secretary, and if a gentleman of means and position, with time at his command, so much the better. *Secondly*, there should be a good Committee, and it should be thoroughly representative, and might be apportioned as follows:—One quarter, representative hon. members, because among them are often not only our best friends, but our best workers; another quarter, cottager members, and the remaining half the most practical bee-keepers in the county.

Now, with regard to the work of the Committee, I should place their work in order of importance as follows:—

(They should first ascertain what can be done for members as far as possible. If a hive, &c., could be adopted for the county, uniformity would be secured, and work rendered easier for lecturers and expert.)

First, the bee-keepers should be visited by competent local experts, or paid experts, whose duty should be *mainly* to advise, though certain manipulations must be carried out to instruct the member in the art of bee-keeping. Only those desirous of adding to their incomes would then benefit by the visit of the expert.

Secondly, a certain proportion of the members will require assistance in the disposal of their produce, and how this assistance shall be given will depend much upon local circumstances, though the first attempt in this direction I think should be to find a home-market, and then provide means for the disposal of any surplus.

Thirdly, the annual show. This is frequently a great expense without the corresponding advantage, and if the county were divided into districts, there might be by arrangement district exhibits at some good local flower show. Of course lectures and manipulations could be provided by the Committee if funds permitted. The district shows or county show to be thought of only when the *first* and *second* duties had been provided for.

There is without doubt room for improvement in the relations of the British and County Associations, for there does not at present seem to be a 'union of hearts.' The B.B.K.A. give great assistance when an Association is being established, but afterwards, if they do give back 18*s.* of the guinea subscription in the form of medals, they do not do as much as they might to foster the growth and promote the success of the County Associations. It has been suggested that the county representatives should have a vote at the B.B.K.A. meetings, and I certainly think they should in everything connected with County Associations. I see by the balance-sheet of the B.B.K.A. that County Associations contributed a little over one sixth of the income from subscriptions and donations, and while it might consequently be said that they should have a corresponding share of voting power, I think that as the object of the B.B.K.A., to encourage, improve, and advance bee-culture in the United Kingdom, must be carried out through the County Associations, half the B.B.K.A. Committee should consist of the Secretaries or other representatives of the County Associations, and whether every such representative should be a member of the Committee, or a moiety of the B.B.K.A. Committee be elected from their number, is a matter of detail, though I think the latter would be a more workable plan.—C. N. White, *Somersham, Hunts, November 22nd.*

B. B. K. A. AND COUNTY ASSOCIATIONS.

[1897.] The two weakest points in the constitution of the B. B. K. A. are, I think,—

1. Members of County Associations are not *ipso facto* members of the B. B. K. A., and *vice versâ*.

2. Subscribers of 5*s.* are ineligible for membership of the managing Committee.

May I offer the following suggestions, hoping that some of them may be useful in solving the problem, 'How shall the B. B. K. A. best advance the interests of bee-keepers, and so secure greater support?'

1. The B. B. K. A. should consist of *District* Associations.

2. No person should be a member of B. B. K. A. *except through a District Association.*

3. A District Association may consist of *five* or more members.

4. Each District Association be affiliated to the B. B. K. A., providing that—

(1.) It is open to every bee-keeper in the district.

(2.) A copy of its rules (of which the above should be one) shall be sent to headquarters, and must be in *general* accord with those of the B. B. K. A.

(3.) An uniform subscription (say 2*s.* 6*d.*) shall be paid for each member to the General Fund.

(4.) A short report, list of members (whose subscriptions are paid), and balance-sheet (with cash, if not before paid), shall be sent up to headquarters on or before December 31st in each year.

(N.B.—Larger subscriptions not to be refused.)

5. The management of the B. B. K. A. be vested in an Executive of twenty-four members, who shall retire annually, but be eligible for re-election.

6. Each District Association *may* nominate one candidate for a place on the Committee.

7. Lists of nominations and retiring members be sent to each District Secretary on a certain date; the voting thereon shall be by ballot, and the result shall be entered on the form and returned within fourteen days.

8. No member whose subscription is unpaid on previous 31st of December will be entitled to vote.

9. As an alternative an annual Conference might be held, each District Association sending one delegate (who shall be entitled to the number of votes belonging to the Association) for every twenty or thirty members. One Association may, if not entitled by its numbers to a delegate from among its own members, entrust its votes to a delegate sent by another Association.

10. The travelling expenses of members of the Executive to be paid.

11. No special rate of subscription should be necessary to enable a candidate to get a seat on the Executive.

12. Each District Association to settle the rate of subscription to be paid by its members, the amount to include subscription to be sent to the General Fund, plus expense of local management.

If the above or some similar scheme were adopted, the interests of the B.B.K.A. (as a whole), the District Associations, and individual members, would, to a great extent, be identical. In considering the above the matter of shows should, I think, be kept out of the question. Let us get a strong (in numbers) B.B.K.A., with a more representative Committee (not three!), and *then* the matter of arranging for shows can be discussed.

I hope, Mr. Editor, you will freely open your columns for a full discussion, using the waste-paper basket and editorial scissors for personal abuse (which is not argument) only. Whatever scheme is adopted *let it be done quickly.*—Thomas Bancock, *Southfleet, Kent.*

MINORCAN BEES.

[1898.] I must beg pardon of the readers of the *B. B. Journal* for having therein stated a year ago, that our bees and the Carniolans were as like as two peas. When Mr. Simmins sent us a Carniolan queen, accompanied by a dozen workers, I never having seen a Carniolan naturally supposed the workers were such also. That gentleman has since informed me that was not the case. We lost that queen through mismanagement and want of practice on our part, and two more queens have since been lost through that of the Post-office authorities, probably. So that our race is still unmixed, which I do not regret; wishing to know, before any further trials, the good and bad qualities of our bees through the capable gentlemen possessing them, which will doubtless be made public in due time.

Apropos, I suppose you have read what our friend M. Bertrand says in his *Revue Internationale* in regard to *his* Minorca queen. He seems to consider her very prolific, keeping two frames of brood after all his other hives had left off breeding. But the most singular part is, that while her progeny are *all born in Switzerland*, they keep up the practice so common here, of systematically and scientifically barricading the entrance with propolis in the fall. I say *scientifically*, because some of these fortifications and bastions seem for all the world the work of engineers learned in the art of self-defence. M. Bertrand says this art must have been transmitted '*through the egg* as an immaterial quality,' according to Vogel, editor of the *Bienen Zeitung*, for none of his other colonies have done so. Is it not a remarkable fact?

Ever since the middle of September, our apple, pear, and cherry trees, have been in bloom as the result of the

autumn rains after so dry a summer. However, the bees do not seem to visit them much, probably finding pasturage more to their taste in the rosemary and cirrhosa now in bloom, besides the numerous aromatic and medicinal plants now covering the fields. Since the rains again set vegetation in motion, our bees have been very busy storing pollen in large quantities. They seem to gather a superabundance of the article, which is an incentive to the wax-moth. But don't they look pretty when returning with their heavy red, and yellow, and orange-coloured loads, under which they seem to stagger? For my part I can say that, next to extracting the precious nectar—which in Minorca *is* precious—nothing gives me more pleasure during the leisure hours spent in the apiary, than this busy pollen-gathering.

Have you noticed what a German writer (probably Dr. Maximo Hertling) living about Granada, says of our climate and flora? It is in *L'Apicoltore* of Milan, for November. Let me see whether I am good at translating from memory. The gentleman has an apiary (old-fashioned, I think, from a letter he wrote us, but yielding largely) in Sierra Nevada, of which he says:—'No other chain of mountains in Europe can boast such rich and varied flora. It, in itself, contains all that the northern and southern countries of this hemisphere possess. It is a perfect garden from spring to autumn. . . . I intend when winter comes to move down the southern slope, where grows the sugar-cane, and where the thermometer never goes down to zero (32° Fahr.), and the weather the most constant you can imagine.' What think you, English apiculturists, of this realistic sketch?

Our World's Exposition at Barcelona is drawing to a close. It has been far more successful than any one could imagine, thanks to the energy and unflagging perseverance of the Catalan character. By the way, Signor Sartori, the Italian apiculturist, paid a visit to it, and gives his impressions in the same number of *L'Apicoltore* as to the apicultural department, composed of our house and a bare baker's dozen of other gentlemen, mostly our followers. My eldest son, Frank, had put up a pretty, stylish *instalation*, as it is here called, containing all the modern fashions—an observatory hive with live bees, after Simmins: sections of various classes, among others some diamond-shaped invented by him, and which, combined in glass cases, formed a beautiful crown or a star: designs in glass, letters, &c.

Mr. Sartori has hardly done us justice, giving the most credit to Mr. Belloch, your translator, which judgment the international jury have certainly reversed, by *unanimously* awarding us not only the *only* one of the gold medals (ten in all) in the Spanish department of all industries, but the still higher award of *diploma de honor*. I should add the praises sung by Signor Sartori of our Minorca honey, but fear you will think I am fishing for a free advertisement, as the Americans say. He adds that Italian apiculturists did not send their products because it would have been 'sending coals to Newcastle' (literally, *water to the ocean*). But even had they done so, I incline to the opinion that they could not have 'taken the rag off' your humble servant and pupils, who have persistently, and in part successfully, tried to profit by your counsels and those of the *British Bee Journal*. As to Mr. Belloch, I doubt whether he gets any kind of a diploma, for he made a poor show.—F. C. Andrieu.

[We have seen the remarks you allude to by a German writer translated into Italian in *L'Apicoltore* of Milan. We do not know to whom allusion is made, as it is only in an editorial note of M. de Rauschenfels, called forth by a remark in M. Sartori's letter respecting the climate of your country. What an El Dorado for bee-keepers, and what a splendid chance to establish the industry there! We are also pleased to hear about the exhibition, and hope that it will give an impulse to bee-keeping, and result in making honey more plentiful, and not only a luxury, as it seems to be at present, but an article of common use. We see M. Sartori speaks well of your exhibit, and says you had, besides appliances, forty jars of beautiful (*bellissimo ed ottimo*) honey, and all was arranged with good taste and intelligence. We are pleased if in any way we have been instrumental in propagating improved methods in Spain.—Ed.]

OUR SCHEDULES AGAIN.

[1899.] I am very pleased to think the suggestions I made in a previous issue of the *B. B. J. re* schedules have not fallen to the ground quite unobserved. When the Committee of Associations, or those delegated to revise the prize list of 1889 meet, I do hope that more consideration will be given to smaller bee-keepers. It is a well-known fact that owners of eighty or a hundred stocks have matters all their own way, while those with their ten or fifteen stocks are quite down in spirits to see the prizes all going to one or two individuals. I quite agree with Mr. Woodleigh (1879) that a large display of honey and honey-comb attracts the public attention: and well do I remember the large displays my brother William made in the years '86-'87, the former at Dumfries, when his stand contained 17 cwt., the latter at Perth, when he staged 1¼ tons; the sight of seeing so much honey on one solid stand is a recollection never to be forgotten. As might be expected my brother was awarded premier honours for those displays; but I should like to know how many bee-keepers could stage a similar quantity, while, if the weight had been specified on the schedule, the competition, in all likelihood, would have been very keen.

In order to give small bee-keepers a chance of gaining a prize a class was introduced during season 1887 at Perth in connexion with our 'Caledonian;' this was for the best display under 100 pound competitors, in the large class debarred. This resulted in being the best-competed-for entry in the show, your humble servant on the said occasion gaining first honours. I consider that ten entries in a class, when a given weight is mentioned, has a more attractive appearance than a class where only three or four entries are staged, no matter how much they contain.

Compilers of schedules should try the suggestion,—have two classes for displays, the one under 100 pounds, the other any weight: this will then give small owners a chance of a prize that hitherto they could not compete for with any prospect to win. If Mr. Woodleigh comes North to try his mettle against Scotchmen, I shall be very pleased to give him a hearty shake of the hand and a Scotch welcome. Our shows are numerous, and fairly good prizes are offered: the inducements are such as might tempt many of our brethren across the Border. Next season the 'Caledonian' show will be held at Melrose, one of our historic towns of fame. Let us hope the season will be a good one, and such as will induce many of our Scotch bee-keepers to visit the 'Royal Windsor Show' and the Co-operative Fête.—John D. McNally.

EXPERIENCES—1888.

[1900.] The past season in England has been one full of experiences to all bee-keepers. Never before within the memory of modern apiarists has such a disastrous season been experienced. It is true that in isolated cases a small surplus has been obtained, but in by far the majority, not only has there been an absence of surplus, but the bees have been unable to gain even sufficient for their winter consumption. In my own apiary, upon examination at end of season, four colonies only had sufficient stores for their winter's consumption, in each of these cases they were Italian hybrids first cross; next in order of merit came the Carniolan hybrids. The pure races were the worst off, many of them at beginning of Sep-

tember having less than a pound of honey in the hive. In this district there will not be above a dozen or so stocks of bees survive the approaching winter, as the straw skeppists will not feed, no matter how strongly you impress upon them the necessity of so doing, though the poorer ones must not be blamed for this want of forethought: in many, very many, cases the reason is a want of funds to provide the necessary sugar. I have this fall driven just over 140 stocks, and in not one of them have I found over five pounds of honey. Many stocks have already succumbed. Although this condition of things to the old-fashioned bee-keeper appears so disastrous, it has its merits—it proves to him in the most marked manner the superiority of modern apiculture over that of our forefathers; this will dawn upon him next spring when he sees that by the necessary attention the modern bee-keeper has saved his charges without loss, then he asks himself the question, If *he* can, cannot I? He will have gained experience by the bad season of 1888.

Feeders.—Another experience of 1888 proves the superiority of wood in the manufacture of feeders over that of metal and glass. On days when, owing to the cold, wet, unseasonable weather, the metal or glass feeders were partially or wholly deserted, but those of wood were crowded with bees. A fault has been found with the wood feeder, that of leakage; this need not be. The failure is entirely owing to the manner in which they are manufactured. Even in cases where the manufacture is bad it can easily be rectified by running wax along the joints inside. Obtain a table-spoon or small ladle, fill this with some common wax which, after melting, pour down each corner and allow it to run in the angle of same, treat each corner in the same manner, and no leakage will occur. The feeder must be perfectly dry.

Feeding Swarms.—The condition of swarms that have been fed and those which have not is totally different, the latter being mostly found upon four or five combs partially built, whilst the former are in a condition to make splendid stocks next season. Unfed swarms in many straw skeps do not number more than about two thousand or so bees (½ lb.), while those that have been fed are full both of bees and combs. The contents in bees of eight colonies, this year's swarms, driven by me in the fall, weighed just under four pounds, and these colonies were in fair condition in comparison to some. They had not been fed at time of swarming.

Queen Rearing.—This has been almost a failure. I have lost dozens through non-fertilisation, having had to destroy them. Many have been lost on their wedding flights, whilst often the weather was so bad that they had to be entirely neglected, and when warm weather did set in it was too late for our attentions. Packing bees and queens in a hailstorm, with the wind blowing 'great guns,' is not anything to 'hanker after.'

The crowding of drones in a given area at time of queen-fertilisation, and also the fertilisation of a queen, was observed by me very successfully. I was informed by a breathless boy that there was a swarm of bees in a field about a quarter of a mile from the apiary, so I, with swarm-catcher in hand, made for them. Upon arrival I recognised at once that the loud hum wavering from here to thereabouts and high up over the field was that of a concourse of drones; while standing listening to them, down, like a meteor from above, came about a dozen drones, surrounding the queen and her consort; they touched the ground just three yards in front of me, and in an instant rose again, the pair having separated. The drone did not die at once, as I searched for yards around for a dead drone, in fact I spent a whole afternoon at this occupation, causing a remark to be made that I must be daft, hunting around in the sun like that for just a dead bee.

Secretion of Nectar.—My hives are placed in the middle of about forty acres of Dutch clover, yet for days and weeks not a bee was to be seen working upon it. Upon tasting it one could not detect the slightest trace of nectar, which in ordinary seasons is so perceptible. No sun, but a plentiful supply of rain, means no nectar, and so no honey. Even borage was deserted, though so well protected from the rain entering the nectaries.—W. B. Webster.

CONTRIBUTION TO THE PHYSIOLOGY OF THE HONEY BEE.—II.

The Food for the Larvæ, How Prepared.

[1901.] It is a well-known fact that all young bee-larvæ receive a whitish jelly prepared by the bees. The worker larvæ are fed by this jelly till the fourth day; after this their food is very different. The queen larvæ get this jelly in abundance all the time. The jelly in queen-cells seems to be more thick and yellow, while the food of the worker and drone larvæ is more watery; this is caused by evaporation, because the royal jelly is longer in the cell than that for worker bees. Not only this, the larval food for queen, drones, and worker bees, is of different chemical composition.

The question is now, how is this jelly prepared? V. Berlepsch affirmed long ago that this jelly is the same fluid found in the true stomach of the breeding bee—chyle. About 1872, Professor v. Siebold affirmed that this royal jelly is secreted by glands (salivary glands), and that the true stomach is closed against the honey stomach by a valve, so it is an impossibility that the contents of the true stomach should be vomited by the bees. He meant hereby the piece *n*, *o* (see p. 569), of the stomach mouth prolonged in the true stomach. These glands were examined and described by Siebold, and later Leuckart had the same opinion, that the royal jelly is secreted by glands.

There are several different reasons against this theory. Schönfeld still believes that the royal jelly is prepared in the true or chyle stomach of the breeding bees. To prove this he examined this named organ very carefully.

We have seen that the piece, *n*, *o*, is by no means a valve, but has quite other functions. If the royal jelly is prepared in the true stomach, and should be vomited, this organ is no hindrance. First, the true stomach is compressed, and a moment later the honey stomach, so that the four lips spring into the honey stomach even to the opening of the pharynx. Now the true stomach is more compressed, and its contents are emptied directly through the four lips into the pharynx and outer mouth without being mixed with the contents of the honey stomach.

I called the royal jelly chyle. This may seem strange, because, with higher animals, the fluid in the stomach is called chyme, while chyle is a more digested chyme in that time when it is assimilated with the blood. But with bees it is quite different. Here all the digestion is done in the stomach, and the fluid goes through the walls of the stomach directly into the blood, while the intestines receive the indigestible part of the food only. So we see, if with higher animals the chyle is prepared in a lower part of the alimentary canal, with bees this is done in the true stomach, and the same is called very correctly chyle stomach.

So this chyle is the royal jelly: to prepare it the bees eat honey, pollen, and water (water for the purpose to eat the pollen). The composition of this fluid is a quite fixed one, and this composition is different in preparing the food for queens, drones, or worker larvæ. This food goes into the true stomach in the manner described. Here it is digested, at first to chyme and then to chyle; the difference in both is caused by the time only, how long the fluid is in the stomach. The fluid is again vomited into the cell in the above described manner.

The queen and young worker larvæ receive, we will

say, well-digested chyle, while the older the worker larvæ grow, the shorter time will the fluid remain in the true stomach, or, in other words, these larvæ receive chyme after the four days.—L. Stachelhausen, *Selma, Texas* (*American Apiculturist*).

Echoes from the Hives.

Bramford Mills, Ipswich.—Mild weather has caused bees to fly about a great deal. I notice fourteen stocks where bees were camping in pollen just as if it were spring-time. Early honey-flow in this season good from *Trifolium incarnatum*, more than 100 acres within four miles. This lasted up to about June 8th; since that time not more than a week in which bees brought home any surplus. My ten hives averaged 27 lbs.—C. E Hitchcock.

Longhorsley, Northumberland, Nov. 19th.—As regarding the Morpeth Association, I do not think there has ever been one on foot, but there might be an Association started, as there is a large number of bee-keepers round about. I, however, hope that some of the Morpeth people will have given you all information required, and I trust that such a thing will be started to encourage our fancy.—Chas. Bell.

Bury St. Edmunds, Nov. 26th.—I am glad to say I have a large garden, so am devoting a good space to bee-plants. I am wintering thirteen stocks which have been well fed, and none have less than 20 lbs. of stores, so that I hope to see them safe and well in the spring. I drove twenty-two condemned skeps at the end of September, and made them into seven strong stocks, and the weather of last month gave a grand opportunity for feeding them up.—W. St. G. O.

Ballinacurra, Co. Cork, Nov. 19th.—The echoes from the hives are for the time of year extraordinary. Bees are working on the ivy with ceaseless energy every favourable opportunity, and have continued to do so since my last almost without intermission. All the hives still contain a large amount of brood due to natural stimulation, and all my colonies that were weak enough in September are now quite populous. The temperature of the air is very high, and quite spring-like. Thrushes are in full song, that for November is most unusual. In following out your 'Hints for the doubling of colonies' in Oct. 11th I had perfect success without the loss of a bee; all my previous attempts in that way had been a signal failure, and was often disgusted at seeing a hive that I had attempted to strengthen nothing stronger, and thousands of bees killed through fighting. Heretofore I had not the 'know how.'—John J. Smyth.

The Mall House, Lismore, Nov. 23rd.—Now the season, a bad one enough, is over, I think it time to send you an 'echo,' and I wish it were a somewhat more lively one. Still, with me, things might easily have been worse. I began badly, losing three stocks, in spite of all my care, in the spring. This left me with eleven bar-hives which increased by swarming to fourteen: but of these, I am sorry to say, two have perished from queenlessness within the last few weeks and during my absence from home. This leaves me now with twelve bar-frame hives, of which I am sure one will not survive the winter, and five skeps. I had only two skeps at the beginning of the season. So much for hives. With regard to honey we began well. At end of May a couple of stocks had mounted to the second storey and filled a good many sections, but after that things went very slowly. Still I got 136 perfect sections, and 61 lbs. of extracted honey, from my eleven hives; roughly speaking, an average of about 19 lbs. per hive. As a matter of fact I got the bulk of this honey from about six or seven hives, the others doing little more than keeping themselves going owing to swarming. The weather is extraordinarily mild for the time of year, and to-day all the hives were very busy carrying in lots of pollen. We have not had a single touch of frost; in my garden I have purple and lavender clematis in bloom, polyanthus, wallflowers, carnations, roses of all sorts, Christmas roses, pentstemons, violets, poppies, and many other flowers. But of course any night may see the end of all this. I noticed this season in some of my hives that the bees were miserably small; in one particularly they were almost like flies. I suspect your correspondents who attribute small bees to badly nourished grubs are in the right, as it was certainly not due to old combs with contracted cells. I never much believed the latter theory, as I have seen swarms of splendid-sized bees out of horrid black old combs in skeps. I have had more work this season than in a good year, and have fed liberally, but still I shall think myself very lucky if I bring nine bar-frame hives and three skeps through the winter. I hear already of numbers of colonies dying out. Here, where the idea of feeding is altogether too much of a new-fangled notion to be believed in, the loss will be immense. —Fanny W. Currey.

Hamilton, Ill., 6th Nov.—The honey harvest here has been very poor, first in consequence of the incessant rains, then in September we had a drought and only half a yield, gathered from weeds. The apiary which has given us the most is the one situated along the bottoms of the Mississippi, where the land is frequently submerged in water, and they are always moist. Eighty hives have given us nearly 5000 lbs. Our 320 other hives have yielded about the same—in all under 10,000 lbs., but the stores for wintering are ample and the colonies are strong. White clover is springing up on all sides, so that we hope next year will in a manner make up for the bad seasons which have just past. Our book is all in type except the index, on which we are now engaged, and will appear during December. —Ch. Dadant.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

John Stuart.—*Honey-yielding Plants.*—1. The names of plants inclosed are many of them useless as bee-flowers. The best are borage, limnanthes, mignonette, corn-flower, and sunflower, the remainder are valueless to the bee-keeper. 2. Excluder-zinc, when placed in the body of the hive, very much impedes the work of the bees. It is a proper ambition of the bee-keeper to discover the queen when necessary, and we should recommend you not to consider this operation as impossible. 3. We see no reason why your stocks, having four frames covered with bees, should not pass through the winter, provided they have a sufficiency of stores. The mildness of the weather induces your bees to take occasional flights.

J. W. Harrison.—*Wasps.*—In ordinary seasons, in the month of October, a change seems to come over the spirit of wasps; they appear, then, to change their nature and to be less savage and spiteful. About that time they are evidently affected with the approach of the cold season, when their instinct teaches them that their further attention to their young will be of no service. Upon the first attack of frost they all perish, except the few females reserved to the following spring for the reproduction of the species. The wasps you have noted in the tree-trunk, protected by their position from the inclemency of the weather, have not yet been touched by the cold: but it is unusual to

find a wasps' nest in full working order so late in the season.

U. P. O.—*Making Sugar-cake.*—Instructions for making sugar-cake will be found in *Modern Bee-keeping* and in Mr. Cowan's *Guide-book*. Treacle is not a desirable wintering food for bees.

R. G.—The sugar-cake forwarded is too hard for the bees to use. When properly made it should, when rubbed between the finger and thumb, be as yielding as granulated honey. The moisture has been driven out of it. The sugar forwarded, if made in accordance with the recipe in Mr. Cowan's *Guide-book*, should have produced a serviceable sugar-cake.

C. S. T.—*Moving Hives from England to Scotland.*—In moving hives great distances three principal points are to be attended to: 1, the rigidity of the frames; 2, sufficiency of ventilation to prevent the suffocation of the bees; and, 3, a watchful eye over them throughout the transit, more especially during the changes of conveyance. The first may be attained by screwing strips of wood across the frames, the second by covering the tops of the hives with perforated zinc or canvas, and we may trust you for the third.

T. M. D.—*Uniting.*—The bees should not be disturbed at the present time; uniting should have been done a month ago, it must now be postponed to next season. See that your stocks have a sufficiency of food to last them well through the winter.

Received from Mr. James Saddler, confectioner, Forfar, a sample of the cream candy for feeding bees manufactured by him. The sample weighs about 4¾ lbs., and is 10×6 inches: and this size is recommended by him as it will cover the ordinary winter nest. In using it two sticks ⅜ inch square should be laid across the frames under the slab: this will enable the bees to consume it rapidly, as they can get to the whole face at once. If any other size is preferred, put the slab into a clean pan and make it as hot as you can hold the finger in; it can then be poured into any form of mould, and it will again become firm. If a small piece is worked between finger and thumb it will be seen how similar it is to granulated honey. We consider that this candy is equal in merit to Good's candy, and it is sold at a very reasonable price.

Business Directory.

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THE

British Bee-keepers' Association

Established 1874.

President: THE BARONESS BURDETT-COUTTS

THE Committee appeal to Bee-keepers, Manufacturers of Bee-keeping Appliances, and others desirous of promoting our Home Industries, to become Annual Subscribers or Donors to any Special Branch of the Association's work.

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Editorial, Notices, &c.

IN THE DARK AGES.

It is with bee-keeping as with many other arts; a study of its early history shows its exponents and votaries were believed to possess some peculiar power by the aid of which they practised their craft. The high-priests of every idolatry, from Baal-worship to Mumbo-jumboism, have been ever eager to assume the garb indicative of the possession of uncanny power, which an ignorant people were but too ready to clothe them. Given ignorance, groping along in the dark, the mind, prone enough to give a dreadful superstitious shape to every strange thing it stumbles across, and imposture is, by this state of things, almost courted. You have, indeed, a highly charged soil ready for the first charlatan who chooses to assert the possession of supernatural gifts, to drop his seeds in. Here, at this day, near the dawn of the twentieth century of civilising Christianity, a man needs but to claim the holding of some secret power, to be at once surrounded by a crowd of believers who present him with a *carte blanche* of credulity. Be he a quack doctor in the market-place with a special pill, a spirit-rapper in the drawing-room, or a thought-reader in the palace, he shall not lack followers, who even persist in believing him endowed with superhuman gifts in spite of his denying protestations, supposing him honest enough to discard, or modest enough to decline, the idea that he is not as other men. Ignorance, credulity, and rank superstition, are an interweaving trinity which have pervaded the dark ages of civilisation—and of bee-keeping. They still stalk about amongst us. Old notions cling with such wonderful pertinacity to our art, even to this day, that it is difficult to shake them off. We have skeppists who 'won't have no science' using section-crates on flat-topped skeps; we have, too, educated men who don't believe any good is got from contemporary bee-literature, after having learnt what little they know of it as a science from bee periodicals (but who are not slow to profit by the science of the past). Then there are sundry survivors of the Kmabto race. These show that such old men of the sea would throttle scientific bee-keeping, if light were not its mainstay and truth its sheet-anchor.

Bee-keepers of long standing, who ought to know better—Heaven help them!—still adhere to the tradition that a start in bee-keeping must be made by a gift of bees, if one is to succeed with them (we can conceive of the proposed recipient holding this view); or that gold must be the price of a swarm (shrewd old bee-keeper!). Ting, tang, with kettle and pan, is to him not a claim to ownership, but a mystery handed down from his forefelders, therefore not to be called in question. The bees also recognise in him the true bee-master, indeed, and will not sting when he is nigh; but let the unsuspecting stranger enter within his gates in his absence, and, *nous avons changé tout cela*, a sentinel instantly proceeds to welcome him by administering its customary subcutaneous tribute. Should there be a death in the family, the bit of black crape must be fastened to the skep, the sad news must be whispered to the bees at night, or they will surely pine and die. If the affection of the bees for the defunct have been of a lively nature, perchance they may dispatch a delegation to accompany the dear departed and bring back a token that all passed off well, in the shape of a resinous exudation from the coffin, surely if—

> 'Imperial Cæsar, dead, and turned to clay,
> Might stop a hole to keep the wind away,'

a souvenir may serve to stop up a slit in a skep?

François Burnens, the assistant of Huber, is reported to have compelled his bees to show sympathy with a bereaved family by turning the hives topsy-turvy. Hobbs, seated in his ingle-neuk, reads his marvelful bee-book to his sleepy wife till Homer himself nods; what wonder if he takes all he reads as fact without metaphor, and believes his bees weird little things possessed of powers far beyond the realms of reason? Maraldi's slug is stung to death, whereupon poet Evans informs us—

> 'The indignant host
> Lay the pierced monster breathless on the ground,
> And clap in joy their victor pinions round,'

—poetic license run riot. The fact is, we really know so little of absolute truth about our favourites, that active imagination surrounds them, in which many theories (absurd and otherwise) find a sweet sustaining medium.

Tell the enlightened bee-keeper of to-day that by holding the breath one becomes sting-proof, and instantly a credulity takes possession of the mind, which only semi-suffocation and sharp stings can displace. An American writer—Miner—coolly disposes of the whole question of scientific research, by evidently concluding that nothing further is needed after reading his book:—'The curtain *has* been raised,' says he, 'and man has beheld *enough for man to know*. As the wisdom of God is past finding out, so is the instructive wisdom of the little bee—a direct attribute of the Architect and Creator of all animate and inanimate nature—beyond the pale of human knowledge.' Further on in his bee-book we are informed, that 'a thousand years hence darkness and mystery will hang over this subject, and man will behold and wonder, but to fathom the secrets of their intuitive wisdom he never will be able;' and, almost immediately, in order to allay a natural curiosity, Mr. Miner presents us with the dogma that the sex of workers is neither male nor female! This blind leader of the blind, this

spreader of error, has the audacity to again venture into the regions of prophecy, and tells us 'there have been so many tinkers at work of late years in forcing bees out of their natural habits, that it would not be surprising if the whole race should become extinct before the beginning of the next century.' We have thus only about a decade in which we may indulge in our hobby. In his day no two kinds of pollen were stored in the same cell, and he places beyond our pale of knowledge the why and wherefore of bees being able to distinguish one kind of pollen from another. His book, as a whole, intended as 'a light shining in a dark place,' is a parcel of egotistical errors enunciated with all the assumption and self-opinion of a Dogberry. It is pleasing, in passing, to read that Father Langstroth said, thirty years ago, 'How many superstitions, believed in by intelligent persons, might be easily explained if it were possible to ascertain all the facts connected with them.' These superstitions, however, in many cases hold the field. We have Virgil with his queen-bee—

> 'God-like to behold,
> Her royal body shines with specks of gold
> And ruddy scales.'

We have Shakespeare with his 'king and officers of sorts;' and Bagster ('what a falling off was there!') next giving us the queen and her high state officials. To-day we have a hive-government not unlike our own constitution. Truly, the history of bee-keeping is highly symbolical of progressive political government.

We have had the erroneous teaching that the queen is a despotic ruler, always attended by the twelve apostles, the chain uniting her to her subjects being linked by affection; and again, in storing, we are told, 'If the cells are already half-filled, they are covered with a kind of cream, which always rises to the top, and prevents the honey from running out of the combs; which, as I have told you, are placed horizontally in the hive.' Cannot you perceive a bee busy with her mandibles, boring a small hole through the cream? Huber has discovered the ears to be in the mouth, for he stopped the mouths of several bees with paste and set them at liberty, after which he found that 'they were insensible of every odour.' Of swarming, 'some people say the noise is occasioned by the queen, who makes a speech to her subjects before she leads them out. Others say that she rouses them with a kind of trumpet, to give them courage for the undertaking.' Spies bring to the queen 'a report of the results of their search, whereupon her majesty sends some of her officers of state to prepare the place for her reception.' The queen only lays royal eggs every third day. The aforesaid Bagster tells us in his book that 'there are two descriptions of males—one not bigger than the workers, supposed to be produced from a male egg laid in a worker-cell;' and that 'the Homeric maxim, that "the government of many is not good," is fully adopted and vigorously adhered to in these societies.'

What was written by Bagster in 1834 holds good in our time, and is pertinent:—'I have universally found the lower classes of people adverse to all instruction in the management of their bees; their fathers, grandfathers, and so on up to Noah, followed this or that method, and therefore it must be good. All innovation is dangerous, and considered as infringing the sanctity of antiquated customs.'

Nutt tells us on no account are we to drive our bees, it is a ruinous practice, and he demurs to the dictum that the old queen invariably goes with a first swarm, but now and then, at her royal pleasure, she sends out a junior queen, herself remaining regnant at home.

So it is, romance and absolute invention of detail (to call it by no other and stronger term) have taken the place of a plain narrative of facts as observed by the early writers. Some of their works are intensely amusing reading, such as the *Female Monarchy* of the Rev. John Thorley, who states that a princess is not only proclaimed queen but *crowned*.

The dark ages of bee-keeping have been prolonged. The gloom has been intensified by the child-like imagery and babble of some of those we are pleased to call the 'early fathers.' For a whole century—up to the time of Langstroth, in point of fact—the bee-keeper has had to feed his mind on literature not at all unlike the contemporaneous rubbish the science of chemistry had foisted upon it—an olla-podrida of astrology, witchcraft, and fraud. Is it then a marvel, as regards bee-keeping, that crass ignorance and superstition still lurk in dark corners of the mind; but foolish prejudices and beliefs still obtain as the heirlooms and traditions of the rustic bee-keeper, when we reflect on the pabulum of their ancestors' mind-searches after the mysteries of the craft?

USEFUL HINTS.

Weather.—Reports from most parts of the country speak of mild weather—of cowslips, primroses, geraniums, roses, mignonette, all in bloom and perfuming the air. And now we are in December and our 'bedding plants' are still blooming unprotected in the open air. Still there has been an almost entire absence of sunshine, plenty of fog, heavy rain, and high winds. Our bees have kept within their hives and we have kept within ours also. The weather has not been such as to entice either them or ourselves to wander forth over the green meadows and flowery fields. No doubt a change will soon come over our dream. In this climate of ours those who anticipate a perpetual spring will soon find out their mistake. Meanwhile we may well feel thankful that the winter is advancing and our bees are healthy and well provided with weather-proof hives and plentiful stores, so that when the cold blast comes, be it short or long, they and we have little to fear. The improvident, thoughtless, and careless ones will be the sufferers, or, rather, have been so already, for their bees, in too many instances, alas! have crossed the Lethean river.

Hives and Stands.—Hives, whether skep or frame, should be carefully looked over to see that all is sound, staunch, and rain-proof. Colonies saturated with moisture, from ill-fitting, chinky roofs or covers, can hardly be expected to live and flourish, and the rough winds, which have caused havoc amongst the ships on our coasts, will have tried to the utmost the soundness of many a hive-stand. Stands on four good stout legs we consider a necessity in this country, and hives should stand at a distance of 18 inches, at least, from the ground.

Hives placed near the ground, whether on bricks or otherwise, absorb moisture, and too often the bees perish from this cause alone. Dryness is essential to safe wintering. Skeps may stand on bricks, four deep, and between the bricks and the floor-board strips of wood should be laid, the whole being protected by a cover sufficiently large to carry off the drip.

Food.—'Amateur Bar-frame' (1890, p. 569) sends us a correction. The 'confectioners' dust sugar,' which we advised for making Good's candy, is, he tells us, the 'icing sugar' of the trade. No doubt he is right, and we thank him for the hint. We have found it at our confectioner's under the name of 'dust sugar.'

In case of starving colonies there is no better food for the winter months, and none more easily assimilated by the bees than this, viz., a mixture of icing sugar and warm liquid honey, well kneaded together, to the consistency of stiff dough. We repeat this because it is very important that colonies short of food should not be allowed to perish. The prospective dearth of bees is likely to be sufficiently large without further additions. The plasticity of the food is one of its greatest merits, as it can be packed between the combs, in close proximity to the bees, or pushed down above the cluster. We have

no experience of the 'cream candy' manufactured by Mr. Saddler, and recommended in the last issue of the *Journal*, p. 584, but, from the description there given, we imagine that it is similar to 'Good's candy,' and is no doubt an excellent food.

Dysentery generally attacks colonies in ill-ventilated hives. The internal temperature becomes too high, breeding ensues, undue excitement and increased consumption of food follow; then comes severe weather —perhaps long-continued frost—the brood is deserted and perishes; the abdomen, overcharged with food and distended to bursting, produces death in the adult bees; the hive becomes indescribably foul by the evolution of injurious gases from decaying larvæ and the putrifying bodies of the defunct bees; and finally the colony perishes.

Upward, or over-ventilation, is also a great evil; the bees become cold, condensing vapours below the combs, rendering the temperature of the hive still colder; the bees are compelled to consume large quantities of food for heat-producing purposes; cold weather prevents their exit from the hive for cleansing flights, and with distended, bursting abdomen they perish miserably. Alas! alas! if only bees and men could maintain the happy medium and keep in the *via media*. *Upward* ventilation, if any, should be insensible; plenty of warm covering above, open entrances and ventilation below, no disturbance, weather-proof and well-protected hives, abundance of wholesome food, a fair amount of population on few combs, young queens, and all will be well.

Snow. Enemies.—Brush snow from the hives; shade entrances from the sun's rays while snow is on the ground; be on your guard against the bees' enemies, and —Rest and be thankful.

Diplomas.—The American Bee-keepers' Association has decided to issue diplomas to experts in apiculture, after due examination, on a similar plan to that established in England, finding it desirable that those who aspire to the charge of apiaries should possess a public guarantee of proficiency in all things appertaining to apiculture. We sincerely congratulate our Canadian (for Canada is to be included) and American brethren on their decision. Nothing, according to our belief, has tended more towards the popularising and extension of apiculture in these realms than the sending forth of qualified men to the remotest parts of the country to teach the art of bee-keeping to the sons of toil as well as to other classes. The work of the American expert will, however, differ in some respects from that of the British. Its object, we apprehend, will not be so much philanthropic as utilitarian, and advantageous to the already established apiarist. Skill and ability in the management of large apiaries, with an eye to profit, will be the chief desiderata.

Cyprians and Syrians *v.* Italians.—Five years ago, in delivering an opening address to the 'Eastern Bee-keepers' Convention' (U.S.A.), Mr. Thompson, its President, reported that, 'His daughter, who had manipulated his bees, was greatly in favour of the Cyprian and Syrian bees. She finds them,' said he, '*much gentler to handle*, and more easy to get off the combs. She can manipulate at the rate of ten colonies of these races to seven of the Italians. Four Cyprian colonies yielded 297 lbs. of honey; four Syrian, 247 lbs.; four Italians, 142 lbs.' What would be said *now* to any one who should thus report? And yet we believe, with gentle and proper management, the manipulation of one race is as easy and practicable as that of another. Not that some races, and even colonies, are not more gentle and less easily provoked than others, but so much depends on the manner of doing the thing, and on surrounding circumstances, that we believe, and we do not speak without experience, Syrians and Cyprians can be as easily handled by those who understand them as blacks and Italians; and we further believe that had either of these sadly-maligned races been the indigenous bees of this country, we should have heard glad pæans—songs of triumph—chanted in their praise. How many have given these beautiful races a full and fair trial? How many have condemned them on hearsay evidence alone? How many on a simple excited trial of one colony only? Yes, both in America and in England these beautiful and excellent races have been condemned almost without a trial. How many *hybrid colonies* have been mistaken for the pure races, and reported as possessing the vilest of tempers? And we refuse to take the word of such men as Benton—men who have given their lives to the cause —because, forsooth, we think they speak from interested motives; or, in American phraseology, 'have an axe to grind.' Truly we English are a suspicious race. He would be a wise man who should forecast the future of the present much-vaunted race of Carniolans—yellow-banded or grey-banded—a decade hence!

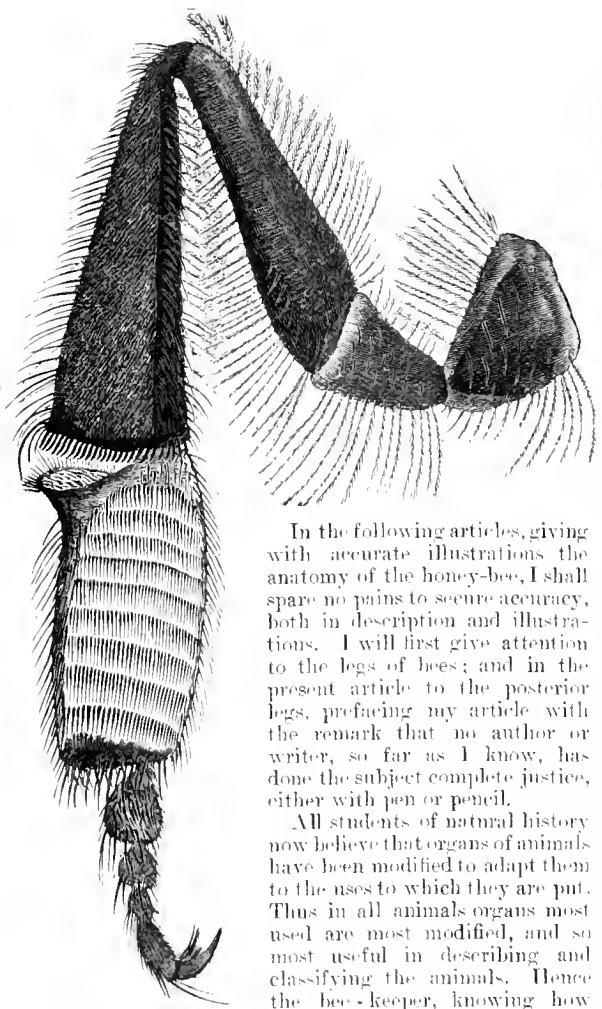
Now they are more gentle, *now* they are more prolific, *now* they are better honey-gatherers than any other race, *now* they are the *ladies'* bees, but what will they be ten, or even five, years hence? Shall we venture a guess? Either forgotten, or so thoroughly hybridised as to be termed the best stingers in existence. Or it may be so entirely absorbed into the English race as to be indistinguishable. *Sic transit gloria mundi*. Probably they will have fulfilled one purpose—that of lining the purses of some, and depleting those of others. Was it for this latter purpose that bees were created? We are told by the immortal Virgil that, 'from intense love of their king (queen), they will expose their bodies in war and seek a glorious death by wounds;' also, that 'some, being led by these appearances, have said that the bees are endowed with a part of the Divine mind.' And this, that we may 'grind our axes,' and feather our nests. Truly, this is a realistic age, an age in which the 'main chance' must be looked to, an age in which the 'almighty dollar' must and will prevail. Already we have lived long enough to doubt the truth of that saying of Seneca, '*Si ad opinionem eis as nunquam eris dives.*' All experience tends to prove the contrary. So let us at once strike out the '*nunquam*.'

Politics.—We have no desire to enter upon the 'politics' of bee-keeping, but we commend to the notice of our readers an excellent article entitled 'County Associations and the B. B. K. A.' in the *Bee-keepers' Record* for December, just to hand. Without interfering, we may perhaps ask the question, 'What would happen if the B. B. K. A. were to remodel itself on the lines of the Royal Agricultural Society of England?' Surely County Associations are sufficiently established to be able to stand by themselves? There is no affiliation of *County* Agricultural Associations to the 'Royal.'

The Honey-Bee and its Work.—Professor Miall opened in the Leeds Philosophical Hall, on Saturday, a series of lectures in which various scientific subjects are to be treated from a scientific standpoint, by a most interesting address on 'The Structure of the Honey-Bee.' The topic could not have been more timely, for in the library of the Museum the Leeds Naturalists' Society was holding an exhibition of bees, honey, hives, and many other things calculated to instruct and to please apiarians. The lecture theatre was well filled by naturalists and others concerned in bee-culture. With the assistance of illustrations in great variety, Professor Miall described in detail all that the microscope has revealed as to the structure of the honey bee, whose life and work were concisely sketched, the review receiving additional point from the introduction of some highly suggestive incidents drawn from the eventful career of the humble bee.

THE ANATOMY OF THE HONEY-BEE.

PROF. COOK GIVES US A TALK ON BEES' LEGS.

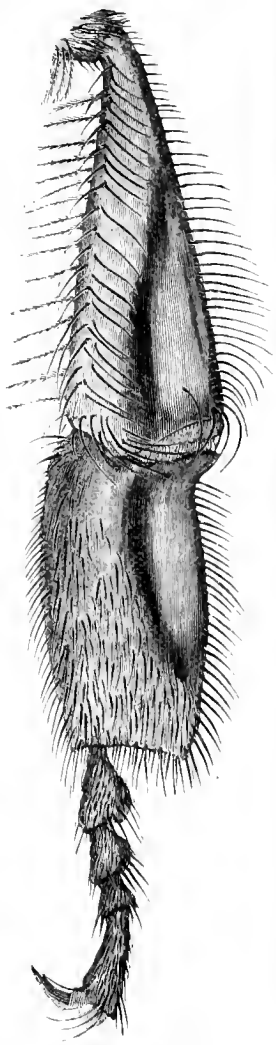


Bee's hind leg, magnified.
Fig. 1.

In the following articles, giving with accurate illustrations the anatomy of the honey-bee, I shall spare no pains to secure accuracy, both in description and illustrations. I will first give attention to the legs of bees; and in the present article to the posterior legs, prefacing my article with the remark that no author or writer, so far as I know, has done the subject complete justice, either with pen or pencil.

All students of natural history now believe that organs of animals have been modified to adapt them to the uses to which they are put. Thus in all animals organs most used are most modified, and so most useful in describing and classifying the animals. Hence the bee-keeper, knowing how important the hind-legs of the worker-bees are in the bee economy, would expect them to be greatly modified; while the scientist, noting the extreme modification, would feel as certain that they had important and varied uses in the life-work of the bee.

The leg of the worker-bee, like that of many other insects, consists of nine joints. The first joint next to the body (Fig. 1*) is triangular, or, rather, sub-conical, in form; short, and covered with compound or pollen-gathering hairs, and is called the coxa. This fits into a similarly shaped cavity on the under side of the bee's thorax—the coxal cavity—and thus forms the articulation of the leg with the body. The second joint is in the form of a truncated cone; is about as long as the coxa, but smaller, and is also covered with compound hairs. This is the trochanter. The third joint is known as the femur, is much the same in form as the trochanter, but is nearly three times as long, and is also beset with the pollen-gathering hairs. The fourth joint, known as the tibia, is flat, and triangular in outline, broadening greatly as it extends from the body. On the outside this has a smooth shallow cavity (Fig. 2) which forms the upper part of the pollen-basket. This cavity is margined with stiff simple hairs, which extend out and toward the end of the leg. They help to deepen the cavity. Those on the front edge of the leg curve toward the opposite edge. A few of these hairs at the end of the tibia are quite long, and curve so as to nearly reach the opposite edge of the leg. As will be noticed in the figure there are also a few compound hairs on the front edge of the tibia. On the inside, at the outer end of the tibia, is a row of spines which help to form the curious jaw-like apparatus seen at the joint, or articulation, between the tibia and next segment, or basal tarsus. In describing the jointed part of an insect, as leg, antenna, or body, we speak of one piece of each part as a joint, ring, or segment.



Bee's hind leg, magnified.
Fig. 2.

The fifth joint, or first or basal tarsus, is very broad, and really sub-rectangular, as seen in Fig. 1. This broad form is peculiar to the higher genera of the family *Apidæ*, or bees. On the outside (Fig. 2), especially on the superior back corner, the pollen-basket is continued, and also deepened by stiff hairs. Above, on the inside, is a sort of toothless jaw, which completes the interesting apparatus already referred to. On the inside are nine rows of bright yellow stiff hairs. These act as so many combs to collect the pollen from the pollen-gathering hairs. We seldom catch and examine a bee in the working season that does not show some pollen-grains adhering to these beautiful combs. The four remaining tarsi are much as usual, as are the two claws and intervening pulvillus at the end of the foot.

The claws are toothed, and the pulvillus is broad. The claws not only enable the bees to hold on to any rough substance, but also to hang in clusters, as seen when the bees swarm. The intervening pulvillus secretes a viscid substance which enables the bee to walk on a vertical sheet of glass. As often seen, bees find this difficult if the glass is powdered with dust.

As already stated, the higher genera have the broad basal tarsus; and the highest—notably *Apis* and *Bombus*—the pollen-cavities. In the carpenter bees the basal tarsus is narrower, and alone possesses the cavity. In the cuckoo bees, which steal into other bees' nests, the basal tarsi are wide, but the pollen-baskets are wholly wanting. In the lower bees, those with short tongues, like *Andrena*, the first tarsus is narrow, as in other insects. The pollen-gathering, or compound hairs, are quite common among bees, often covering much of the

* We are indebted to the kindness of Mr. A. I. Root for the use of these illustrations.—ED.

body, especially on the lower side. The peculiar jaw-like arrangement between the tibia and tarsus I find only in the worker-bee of the genus *Apis*, and in the queens and workers of the genus *Bombus*. This is as we should expect, if the function of these forceps is to grasp and convey the wax-scales to the mouth. The beautiful pollen-combs on the inside of the basal tarsus (Fig. 1) are peculiar to the hive bees, or bees of the genus *Apis*. Such bees need much pollen, and so are well provided with organs to collect it. While the stingless bees of Mexico have well-developed pollen-baskets, they are without the pollen-combs. The absence of the stiff spur—tibial spur—at the end of the posterior tibia is also peculiar to our honey-bees, or bees of the genus *Apis*.

The compound hairs are peculiarly fitted to collect the pollen from the stamens of the flowers, and to hold it till it is combed off by the beautiful combs already referred to. In some genera of our wild bees the pollen-brushes are very large on the femora, and in some the pollen-baskets are on the trochanter and femur.

The posterior legs of the queen are much the same form as those of the worker. They are large, but have not pollen-baskets, the highly developed hairs, the curious jaws and pollen-combs, which serve to distinguish the worker. The drone has weak legs, with simple hairs: the tibia is more narrowed toward the femur, and the basal tarsus has rounded angles. Here we find no pollen-baskets, and the jaw-like joint is absent. The drone's legs are even simpler, or less modified, than the legs of the queen.

We see how useful are the posterior legs of the worker-bees. They aid in walking; they sustain an enormous weight when bees cluster; they gather, transfer, and carry the nitrogenous food (the pollen) and the propolis; they grasp and carry forward the delicate wax-scales, and aid to clean off the pollen as the bee frees its legs of this substance when the latter is pushed off into the cells of the comb.

There is no wonder, then, that these parts are useful in classifying this part of the great insect world. Thus we say, the higher bees have the broadened basal tarsus, and the pollen-gathering hairs. The genera *Bombus* and *Apis*, with the stingless bees, have the pollen-baskets well marked, while only the two genera, *Apis* and *Bombus*, have the jaw-like joint, and only *Apis* the pollen-combs. The lower bees, like *Andrena*, have all the tarsi narrow. As some of these *Andrena* look much like bees, and often steal into the hives to pilfer honey, it is well to know their peculiarities.

In our next we will describe the anterior and middle legs of the worker-bee, which are also very interesting.—A. J. Cook, *Agricultural College, Mich.* (*Gleanings*).

(*To be continued.*)

Foreign.

BRAZIL.

Among the various races of bees which I succeeded in collecting, there is one that I do not at all wish to see increased. This is the *Trigona flaveola*, a stingless bee, commonly called by the natives here '*Cuga fogo*,' meaning, fire excrement.

Not knowing what kind of an insect I had to deal with, I had not, when I went to remove them from their abode, taken any special precautions against their attacks, the consequence being that I shall have very good reasons for remembering the warm reception they gave me for the remainder of my life. In fact, my thoughts were so much taken up with the idea of adding yet another specimen to my bee collection that I was paying very little heed to the effects of their attacks when they flew at me at the commencement of my operations, until I felt compelled to take notice of their doings by reason of the effect they had upon my skin. At last I was obliged to conclude that if my new bees were deprived of the familiar sting, they were at all events supplied with a good set of teeth, of which they were making free use at my cost. My head and arms soon became covered with their bites. These, to make matters worse, were poisoned with a caustic liquid they are privileged to supply, and the effect was simply torture itself.

But I refused to be beaten. Notwithstanding their furious darts at me, the nauseous smell of the liquid poured into my wounds, causing great pain, and the warlike sound of their peculiar buzzing round my ears, I stuck to my work until completed, and then lost no time in beating a hasty retreat from the scene of operations, taking my prize with me, but pursued for a long distance by my assailants.

As soon as I had a chance, I applied fresh water to my wounds, thereby obtaining a certain amount of relief, but I felt far from well for several days afterwards. Later on, the skin on my arms and head became rusty, as it were, by the action of the liquid used by the bees, and peeled off in chips.

Notwithstanding all these drawbacks, I did not fail to attend to my bees, which I eventually placed, honey and all, into a box, which they soon filled with comb. The expeditiousness with which they did this was, in my estimation, a compensation for their bad temper. Still, I was not long in discovering that they had more bad than good qualities, for, as soon as they found out that I had been feeding the other bees, they rushed out of their box or hive in great numbers, and straightway made for the fed stock, of which they were soon in full possession, by turning out their inhabitants. Nor were they satisfied with taking away every particle of honey they found in them. Owing to the great heat they produced, the combs in the robbed hive began to get soft, and in this condition they were carrying wax away as they would pollen.

Upon another occasion when I transferred two stocks, they took advantage of their weak and confused state to turn them all out, and took possession of their hives. When I noticed this the robbing process was too far advanced to be of any practical use my stopping it, so I stood there observing how these bees, small as they were and without stings, could have the upper hand with the common races, three times their size and well armed. When bees belonging to the robbed stock returned home from the field, these *Trigona flaveola* waited for them at the entrance with a most arrogant attitude, and compelled them to lay down their load then and there.

I attributed the victory of these small bees over the others to the potent smell, *sui generis*, and, of course, also to their biting qualifications, which are most painful. I also discovered that, contrary to what their name, *caga fogo* (fire excrement), might lead one to suppose, this liquid is not emitted through the abdomen, but through their mouth.—E. Blondet (translated from the *Apiculteur* of Paris).

AUSTRALIA.

Hunting Bees.—The wild bee of Australia differs little in size or appearance from our common horsefly, and is stingless. Most of the trees in that country are hollow, and it is in the cavities of the branches that the bees deposit their honey, at a considerable distance from the ground. It is of an aromatic taste, and chiefly gathered from the leaves and blossoms of the different trees that clothe the whole country, from the summits of the mountains to the sea-shore, with the exception of occasional plains, which are of rare occurrence. By the aborigines of Australia this honey is regarded as a great luxury, and it is very interesting to note with what sagacity they contrive to indulge their taste for it, searching it out with infallible eyesight, and with amazing deli-

cacy of touch. Their method of finding these natural hives, which are not numerous, is curious, not only from the fact that the most minute observation and the most delicate manipulations must have been required to enable the inventor of it to succeed, but also because it displays a knowledge of the natural history of an insect, such as I can venture to say a large portion of the civilised world does not possess.

From the absence in many parts of the bush of Australia of flowers, the little native bee may be seen busily working on the bark of the trees, and, unlike the bee of this country, which is ever on the move from flower to flower, it seems to be unconscious of danger. This may arise from the vastness of the solitudes in Australia, which are seldom or ever disturbed, except by a passing tribe, or by its own wild denizens, which are far from numerous. The bee is therefore easily approached, and the bright, clear atmosphere of the climate is peculiarly favourable to the pursuit.

A party of two or three natives, armed with a tomahawk, sally forth into the bush, having previously provided themselves with soft white down from the breast of some bird, which is very light in texture, and at the same time very bluffy. With that wonderful quickness of sight which practice has rendered perfect, they descry the little brownish, leaden-coloured insect on the bark, and rolling up an end of the down feather to the finest possible point between their fingers, they dip it in the gummy substance which a peculiar sort of herb exudes when the stem is broken: they cautiously approach the bee, and with great delicacy of touch place the gummed point under the hind-legs of the bee. It at once adheres. Then comes the result for which all this preparation had been made. The bee, feeling the additional weight, fancies he has done his task, and is laden with honey, and flies off from the tree on his homeward journey, at not a great distance from the ground. The small white feather is now all that can be discerned, and the hunt at once commences.

Running on afoot amid broken branches and stony ground requires, one would think, the aid of one's eyesight; but with the native Australians it is not so. Without for a moment taking their eyes off the object, they follow it, sometimes the distance of half-a-mile, and rarely, if ever, fail in marking the very branch where they saw the little bit of white-down disappear at the entrance of the hive. Here there is a halt, the prize is found, and they sit down to regain their breath before ascending the tree, and to light a pipe, to which old and young, men, women, and children, are extremely partial.

When the rest and smoke are over, with one arm round the tree and the tomahawk in the other, the black man notches the bark, and placing the big toe in the notches of this hastily constructed stair, ascends till he comes to where the branches commence. Then putting the handle of the tomahawk between his teeth, he climbs with the ease and agility of a monkey, until he reaches the branch where last he saw the white-down disappear. He then carefully sounds the branches with the back of his tomahawk, till the dull sound as distinct from the hollow sound tells him where the bees are. A hole is then cut, and he puts his hand in and takes the honey out. If alone, the savage eats of the honey until he can eat no more, and leaves the rest. But if others are with him, he cuts a square piece of bark, and after having his part as a reward for his exertion, brings down a mass of honey and comb mixed up together, which, though not inviting, is greedily devoured by his partners below.

SWITZERLAND.

Those of the bee community who have been following the suggestions contained in the paper read at the last Quarterly Conversazione of the B.B.K.A., and the discussion which ensued therefrom, bearing upon the relative position of County and other Associations, can hardly fail to derive an additional amount of interest from their knowledge of the fact that a similar idea seems to be running in the mind of Swiss bee-keepers. It is certainly strange, if not an actual sign of the times, that the same want should have been felt in both countries almost simultaneously, as it will be seen from the following remarks made in the Swiss *Revue Internationale d'Apiculture* of last month when commenting upon the result of the work done of late by a section of a bee Association. We proceed, therefore, to give a translation of our Swiss contemporary for the benefit of our readers:—'Our Côte section has just held its autumn meeting at Begnins. The Chairman gave a summary of the work done from the beginning, and dwelt upon the objects they had in view. He urged the members to assist each other mutually, adding that that while assisting a neighbour, we can add to our own experience. . . . . The number of members reaches already sixty, a very encouraging figure to start with! But we question whether the fact of their being spread over a large district is not a drawback. In our estimation, if a section is to be in a position of rendering substantial aid to our cause, it should consist of bee-keepers residing within a certain locality; or if more than one locality be grouped together, they should be situated close to each other. They will then be able to hold friendly meetings, assist each other in various ways, club themselves together for the purchase of expensive utensils, journals, to buy wholesale when advantageous, and combine generally for the disposal of their honey, &c., &c. All these advantages are unobtainable when, like in the case of other sections, the members have to travel long distances if they wish to meet. To overcome these difficulties, could not sub-sections be started, each presided over by a member of the Committee?'

We will keep our readers informed of the effect these suggestions of the *Revue* are likely to have in Switzerland; in the meantime we will watch their development with interest.

YORKSHIRE BEE-KEEPERS' ASSOCIATION.

A Committee Meeting of the above Association was held at the Church Institute, Leeds, on the 1st inst. In addition to others, there were present the Hon. Sec. of the Horsforth and Craven branches. Mr. C. Howes, the Secretary of the Hull branch, wrote explaining his absence.

After the Hon. Secretary was authorised to make certain payments, a lively discussion took place on the respective merits of wooden-walled hives *versus* skeps for wintering bees in. Paint outside, damp within; propolis inside *versus* damp without, that was the question; whether 'to bear the ills we have, than to fly to others that we know not of.' Mr. J. Clark led off the subject, and from his practical success in straw-walled hives over admittedly badly-built wooden ones, he spoke to much purpose. Advantages *pro* and *con* were well discussed, resulting in a proposal by Mr. A. F. G. Burniston (Hon. Sec. Horsforth branch), carried *nem. con.*, that Mr. W. Dixon, 5 Beckett Street, Leeds, be instructed to construct for the Association a hive to be built of straw and some other material, which should contain at least ten standard frames, to be capable of supering, &c., the selling price not to exceed 15*s*.

The Hon. Secretary, Mr. Grimshaw, next explained to the Committee the steps he had recently taken respecting the pending proposed changes in the constitution of the B.B.K.A. (opening up the counties to subdivision and opening the Committee of the B.B.K.A. to provincial representation). A unanimous vote of approval was taken of this matter, and it was hoped that the hands of those gentlemen, who sacrificed so much for the benefit of the B.B.K.A., might be thus strengthened.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements.)*

*** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

MINORCAN BEES.—BARRICADING.—CONTRACTING ENTRANCES.

[1902.] I willingly respond to your question in last week's *Journal*, p. 574, on the characteristic supposed to be '*peculiar*' to Minorcan bees of scientifically barricading their entrances in the autumn, and respectfully beg leave to say that the habit of barricading is by no means '*peculiar*' to that particular race, although as a matter of fact they have, as far as I have observed this year, developed the characteristic in greater degree than any others. So long ago as January, 1879, that very able and observant apiarist, '*A Renfrewshire Beekeeper*,' put on record, p. 177, vol. vi., *B.B.J.*, the following under the heading '*A Severe Winter*:'—'Towards the end of September I discovered the two side entrances of one of my strong Stewarton colonies, each five inches long, entirely barricaded with "walls of propolis;" and subsequent examination of the entrances of friends' stocks showed how generally contraction with the same material had been adopted—our little favourites thereby displaying the wonderful sagacity with which they are endowed in forecasting the weather. In the autumn of 1877 no such barricades were built, and a mild winter followed.'

My Minorcan stock barricaded its entrance, but not in the way suggested by your illustration, p. 573; they made a sheet of propolis extending from the bottom rail of the frame next to and parallel with the entrance, attaching it to the upper side of the entrance itself, and thence down to the floor-board, leaving about an inch in width of the entrance open, the same being about ⅜ an inch high. A cast which had become queenless and had had two full combs of Minorcan brood given to it showed a desire to narrow its entrance, but apparently was not strong enough, and the entrance is now decorated with beads of propolis attached to its upper side at irregular distances from each other.

My heading to this paper will give an excuse for saying a few words on this particular 'cast.' As I have said, it became queenless, and two frames of Minorcan eggs and brood were given to it, but from these resulted a wretched fertile worker whose antics were amusing, to say the least, though they formed the subject of much anxiety and careful observation. In that hive there were at one and the same time, on one side of a beautiful worker comb, large numbers of unmistakable drone brood, numbers of sealed brood that by appearances could not be told from workers, and a number of queen-cells, several of which hatched out drones, of course. I say 'drones of course,' because I have never found a queen, and in the queen-cells I opened I found drones only.

For the fun of it I have at this moment, 12.40 p.m., in a gleam of sunshine, opened this hive. There are about 1500 bees, chiefly drones, some brood of the puzzling type or types above described, and plenty of stores, chiefly due to feeding. If any one would like a few of the drones I will gladly send them all alive on immediate application. To all intents and purposes they (as a stock) are moribund, and I shall make no attempt to save them.

My idea, when they first began to propolise the entrance, was that they were making a demonstration against what I will call the *silly* theory of wide entrances for winter, and I thereupon looked around and found, in almost every instance, where the entrances had not been partially closed, that the bees were practically filling them with their bodies, scores being engaged in defending the huge openings, and giving the idea that wholesome activity prevailed. This was, however, soon put to rights, and I have not now, to my knowledge, a single stock that has not its frames across the entrance, or that has an entrance way more than an inch wide and half an inch high.—C. N. ABBOTT, *Southall, Dec. 3rd.*

P.S.—I hope to offer a few further remarks for your next on these subjects.—C. N. A.

A COUNTY DOWN BEE GARDEN.

[1903.] The pleasure was lately mine to visit the bee-garden of a successful amateur bee-keeper in the county of Down; and as we Irish are generally supposed not to have kept bees till within the last few years, and even now to know and do little about them, I wish to tell your readers what I saw in this place. The time was on Michaelmas Day last, when nearly everybody was busy feeding stocks preparatory to packing up for the winter.

Mr. Paul M'Henry, the honorary secretary of the North-east of Ireland Bee-keepers' Association, met me by appointment at Dunmurry station, four miles on the Great Northern Railway from Belfast. The village of Dunmurry is worthy the notice of tourists, though it was once, and that not so long ago, a far more picturesque spot than it still must be admitted to be. The water yet splashes over the big wheel. How well I recollect the numbers of pigeons that used to crowd the moss-grown roof of the mill! The quaint old meeting-house stands unchanged in its 'green,' where the dust of generations of sturdy Presbyterians rests. A few aged cottages retain their trim gardens, set full of old-fashioned flowers, the fine trees are as usual populated by noisy colonies of cawing rooks, and a remnant of the ancient earthwork, or 'dun,' from which the name is derived, can be still pointed out. But there are rows of freshly built brick houses, and many snug villas, which betoken that before long Dunmurry will be absorbed in the suburbs of the city of Belfast.

From this a narrow byroad led us past some gentlemen's seats prettily situated in well-wooded grounds, and then a path took us to the bleach-green of Seymour Hill, where a Mr. Charley carries on the various processes of bleaching and finishing linen, the fields thereabouts being covered with a mantle of white webs like snow in summer; but there was no summer in 188-. Close by this we crossed the small river called the Lagan, every foot of fall in which throughout its course is utilised for manufactories of linen. We were then in the county of Down. This flat valley of the Lagan, with its wide fields, its abundant trees, its well-cultivated fields, its neat dwellings with a general look of cleanliness and thrift over them, always reminds me, more than does any other part of Ireland, of a bit of English rural scenery.

A little way down the tow-path of the canal which is here parallel to the river, and up a shady lane overhung by beeches and limes, and we reach our destination, where the faithful house-dog examines the visitor, and welcomes his master, and quickly fraternises with the former.

The house of my bee-keeping friends is an antique, thatched farmhouse of the small proportions and plain exterior prevalent in the district, and is covered with tea-roses, pyrus japonicas, and cotoneasters.

After we had had a few minutes' rest and a refreshing glass of milk, Mr. M'Henry's brother joined us, and we moved towards the bees. The garden in which they are kept is close to the public road, only a whitethorn hedge intervening. This fence had latterly to be allowed to grow a couple of feet taller than it formerly was, in order to save persons while passing being hit in the face by the insects on their flight. Not long ago, the driver of a vehicle from Belfast, to whom modern bee-hives were a novelty, was passing with some passengers on his car to whom he was heard to remark, 'What a queer place for a graveyard!' And his error was perhaps excusable, there being forty-five hives standing in this half rood of ground, and all are painted white.

The Messrs. M'Henry informed me that they have tried in their time many hives, amongst them being the Woodbury, the Renfrewshire, the Quinby, the treelog or rustic, the Pettigrew straw with supers, Abbott's Irish Combination, and the Anglo-German. This last was such an enormous affair that it now makes two good-sized hives after having been bisected. But most of those at present in use are 21 inches wide, and 19 inches high in front; 26 inches deep, or long, from front to back, and 16½ inches high at the back. These are made of inch deal, with double walls, packed, the frames being parallel with the front. The roof slopes from front to back, and is covered with calico and painted, which these bee-keepers, who took the hint from me, agree is the best of all protections against wet. Every hive is provided with a 'lift,' or super case of nine inches for summer use, but these had been all stored away previous to my visit. The legs of these hives are attached to the bottom board or floor, on which the hive is moveable. The flight-hole is twelve inches over the ground and the flight-board is nine inches deep. The porch is a simple saddle of two pieces of wood, and the doorway is provided with slides that allow of its being varied from half to nine inches. All the frames are of the Standard size of the B. B. K. A., which has been universally adopted in the north of Ireland. On them the Messrs. M'Henry have used distance pins, broad shoulders, W. B. C. metal ends, and Abbott's wooden pegs, but for the future they intend doing without such aids, and spacing the frames by the eye alone.

The $4\frac{1}{4} \times 4\frac{1}{4}$ sections are the only size the brothers use: their crates hold twenty-one, and they have both tin and wood separators. As to slotted dividers, they told me they could not give an opinion, not having had a fair season's work with them. Mr. P. M'Henry told me he used a paraffin lamp and melted wax to fix his foundation, and could do it quickly and securely; he has some new appliances for the purpose, but prefers to stick in this, and in many other things, to the old plan.

In the year 1887 the yield of these hives was 1100 pounds. They go in exclusively for comb honey, but the produce of the wretched weather of 1888 had been so poor that I found fast feeding in full swing. Seven hundredweight of sugar had already been given in syrup, and another hundredweight was ready to be made into candy, over the cakes of which enamel quilts will be placed on the frames. With Neighbour's Improved Canadian Rapid Feeder, it was found possible to get a starving stock to take twenty pounds of heavy syrup within the twenty-four hours. Both brothers spoke highly of its efficiency, and I had the gratification of seeing several on hives with the bees busy emptying them.

They have also made use of the feeders of Ross of Stranraer, Raynor, Lonsdale, Simmins's New Rapid Dummy, and Meadows' Rapid, but think Neighbour's the best. Everything was being done to provide a plentiful commissariat and abundant winter clothing for their bees, the Messrs. M'Henry considering that if bees are kept comfortable with warm packing in the cold season they consume less stores, and hence they have every hive 'happed' on the top of the frames with thick quilts and cushions, some of which were of chaff.

The races of bees that they keep are the pure English black or brown, and a crossed Ligurian. These last are beautiful insects, as active, and nearly as bright in colour, as the pure Italian Alp bee. One or two of the stocks were pointed out to me as being of a very irascible nature. But though many hives were slightly inspected from the top of the frames, and bees were on the wing everywhere, there were no applications of their weapons to our hands and faces. While examining the hives a redbreast appeared and picked up earwigs from the inside as soon as the roofs were lifted off. This bird made its nest last springtime under the drooping fronds of an Aspidium fern growing in a pot in the greenhouse, and had its 'exits and its entrances' by a hole through which the stem of a vine gains admittance. It was surprisingly tame, came when called 'Bobby,' and snapped up its delicacies with evident appreciation.

The bee-garden is well stocked with trees and bushes of the large and small fruits, and quantities of arabis, crocuses, and wallflowers, are specially cultivated in it for the spring delectation of the inhabitants of the hives. I noticed that water was supplied to the bees in a large galvanised iron trough filled with sawdust, and that they were largely availing themselves of it.

In a corner of the garden is a wooden bee-house, like the one described and figured at p. 57 of Cheshire's *Practical Bee-keeping*, published about twelve years ago, and made to hold eight skeps. It is now converted into a handy store for odd frames, sections, crates, feeders, smoker, packing, &c. Among its varied contents I saw a queen-nursery frame, containing twelve cages for queen-raising; it is almost identical with one figured and described at p. 306 of Cheshire's *Bees and Bee-keeping*, vol. ii. It had not yet been used, but I learned they intended trying it next season. Here also was a home-made winter-passage cutter, about the need of using which my friends and I gave no opinion.

Having gone the rounds of the hives, old and new, and discussed their points, and smoked our pipes in the greenhouse, where, by the way, was a perfectly grown specimen of the exquisite fern *Todea superba*, we were called in to tea at which the venerable mother of the home presided. Mrs. M'Henry chatted about her sons' employments, and bee-fancying as their profitable recreation, in a way that showed she entered most cordially and intelligently into them all. Though past fourscore years, she is surprisingly active, and in full possession of all her faculties. She exhibited to me a large bell-glass made more than half a century ago in Belfast for supering on a flat-topped straw skep, and she described the anxiety it caused her to get it home in safety for her husband, and how she had to carry it the whole distance in her own hands. Such a glass would hold nearly twenty pounds of honey in the comb. Her sons have evidently inherited their father's tastes. Mr. Paul M'Henry, sen., was one of the intelligent and advanced bee-keepers of his day, and kept from ten to fifteen hives. And, all honour to his memory, he never brimstoned a single stock.

Exactly such another, or the same, big bell super on the flat-topped skep, is figured and described in a Survey of the County of Down by the Rev. John Doubourdieu, and published in 1802. This writer mentions 'the superior management of bees with as much skill as humanity' by two County Down gentlemen, who practised this 'method of obtaining honey without killing the bees.' Mr. M'Henry, sen., also nadired straw skeps by means of bottom boxes, and afterwards used Nutt's Collateral hives and square box-hives with fixed frames. Portions of some of these I saw preserved as memorials of the past.

On their well-stocked bookshelf they have a curious volume in which is bound up a quaint tract in rhyme,

entitled, *The Panorama; or, A Journey to Munster. A serio-comic poem, with historical, national, and natural sketches of Ireland, from the days of Queen Bess to the Forty-seventh year of the present reign. Printed in* 1807, *in Dublin, by J. J. Carrick.* In this production there occurs a notice of bee-keeping which shows that more than eighty years ago Ireland was not so far behind the world. The lines are as follows:—

'To these, and rarer qualities,
Tim adds the skill and care of bees;
In spring observes their swarms and hives 'em,
In autumn suffocates or drives 'em;
If sick in winter—Tim, they tell us—
Their fluxes stops without Amellus.'

Here also I noticed Langstroth's standard work, Taylor's book, Dzierzon's *Rational Bee-keeping*, Cheshire's *Practical Bee-keeping. Modern Bee-keeping*, the *British Bee Journal*, the *American Bee Journal*, and the *Bee-keeper's Record;* and I had every reason to know that the volumes had been often and carefully studied.

I was next taken to a spacious workshop, lately fitted up in the farmyard, for making the various appliances they require, and where there were stored up piles of super covers, packages in paper of empty sections and crates, frames, boxes for carriage of honey, and the *et ceteras* of a regular bee-farm, though bee-keeping is only the occupation of the M'Henrys' after hours, one brother being a diligent farmer, and the other engaged in a linen warehouse in Belfast.

Having some time to spare before starting to catch my return train, I was conducted over the farm, and introduced severally to the colts, horned cattle, prize pigs and sheep, poultry and rabbits, and, last of all, to the loft devoted to a colony of homing pigeons which are found very convenient for bringing messages from Belfast.

Another glance round the charming scenery of the district, with its peeps of snug farmsteads and rich merchants' mansions, the graceful spires of Drumbeg and Drumbo churches, the County Antrim mountains, and County Down hills, the tall factory chimneys of Lambeg, and the time has arrived to say good-bye. I shake hands all round, and Mr. Thomas M'Henry gives me a packet containing what he calls some 'Irishman's cuttings,' *i. e.*, rooted plants of Pelargoniums, which I bring away as keepsakes along with pleasant recollections of my father's, my own, and the bees' friends at Ballyskeagh.—H. W. Lett, M.A., *Aghadery Glebe, Loughbrickland, Co. Down.*

COUNTY ASSOCIATIONS.

[1904.] I have read with interest the correspondence that has appeared in the *B. B. Journal* respecting the above. It is evident that the time has arrived for radical reform in County Bee-keepers' Associations—that is, they must be worked on an entirely new basis, or inevitably collapse; at least such is the case with the Association to which I belong. In your last issue, Mr. White makes mention of Cambridgeshire and Huntingdonshire being amalgamated,—a proposal with which I heartily agree, and, with your permission, will offer a few suggestions for the working of the same. My idea is that a central Society should be formed for the two counties, which could be called 'The Cambs and Hunts Bee-keepers' Association,' branches of which should be established throughout the two counties. Each branch, or district Association should have a secretary, treasurer, committee, and, if thought desirable, a president. It has been suggested that such Associations should be affiliated to the 'British,' and should hold local annual shows,—to which I strongly object. To be worked properly a district Association ought to consist of not more than twelve parishes, to which the requisite affiliation fee would be a serious item, and the prizes offered at their annual show must necessarily be few and small. But that is not all. The whole of the prizes, both money and medals, would to a certainty be, year after year, swept off by the same very limited number of persons, which would be hard and unfair on those who, for causes beyond their own control, are placed at a discount, and who would therefore be heavily handicapped by the regular clique of prize-winners; this would not be encouraging for new members to join, nor for old ones to continue their subscriptions, and would, in my opinion, be courting failure from the commencement. I would therefore suggest as an amendment that each branch should contribute a stipulated amount to the Central (Cambs and Hunts) Society, which should be affiliated to the 'British,' whose fee need not necessarily be limited to one guinea. One grand annual show could then be held alternately in Cambridgeshire and Huntingdonshire. But before discussing the functions of the Central Society, let us see what advantage there is to be gained by forming a District Association.

1. Early in the year each member could forward to the secretary, or a committee appointed for the purpose, a list of bee-keeping requisites he might require for the following season; each one would then get his goods at wholesale price, and everyone combining would be mutually benefited—simply an extension of the co-operative principle.

2. The Society would be able to fix the price of honey; so that, instead of underselling one another, as is at present too often the case, every one in the district would have a chance of selling his produce at a remunerative figure; they could in fact practically monopolise the local honey trade. Members having honey for sale could communicate with the secretary, stating quantity and description. The whole of the honey within the limits of the District Society could be easily collected to one spot, which has never been practicable with County Associations. The secretary could then communicate with wholesale dealers with a view of disposing of the whole in one lot, or if necessary a qualified member could be sent to London to ascertain the wants of dealers and prices offered. The Society would thus procure the best possible market for its members' produce. I see no difficulty in the way of this. Excursion trains are run from all parts during summer and autumn, the fare for the return journey being in most cases considerably less than the ordinary single fare, and the train timed so as to give excursionists a long day in town.

A committee meeting could be held as often as necessary. At the end of the season a general annual meeting should be held, which meeting should commence with a first-rate supper, to which members of other branches of the central society should be heartily invited. The secretary should then give a report of the year's working of the society; all should be clear and above-board, and beyond all suspicion. The business of the society having been dispensed with, the rest of the evening could be occupied with a general conversation on matters appertaining to bees and bee-keeping; and if the same could be interspersed with an occasionally lively song and a moderate amount of smoke, so much the better—a sort of free-and-easy. I feel confident that a district society worked somewhat on the above lines could be made self-supporting, and that every member would be mutually benefited. The central society would then have practically nothing to do but collect subscriptions from those who might be induced to contribute, and arrange annual shows. At present, one who wishes to exhibit must either show against a labourer, who may be working for 10*s.* or 12*s.* per week, and own, perhaps, four or five stocks, or against those owning large apiaries, and who devote most of their time to bee-keeping: this wants altering. There should be at least four times the present number of classes, and as many open classes as possible.

The society should hold their annual meeting in connexion with the annual show; a public luncheon should be provided. The business of the Association having been considered, papers relating to bee-keeping should then be read and discussed. A report of the papers read, and the discussion thereon, would be published in local newspapers and read by everybody, which I am inclined to believe would do more to popularise bee-keeping than any attempt that has been previously made by County Associations. The above is a hurriedly written letter which I have not time to elaborate, but trust that the suggestions it contains will be freely criticised by others, especially prominent bee-keepers in Cambridgeshire and Hunts.—A. SHARP, *The Apiary, Huntingdon.*

THE BRITISH AND COUNTY ASSOCIATIONS.

[1905.] I cannot agree with your correspondent, Mr. C. N. White (1896), that from 'the perusal of many of the late issues of the *B. B. J.* it is evident something is wrong with regard to the connexion of the Central and the County Associations.' I have followed this correspondence, and fail to find that anything has been published tending to show that the relationship is in any way unduly strained.

Mr. White states that the Central Society does 'not do as much as they might to foster the growth and promote the success of the county associations.' May I ask whether Mr. White, as a county secretary, has at any time made suggestions either at the quarterly meetings or to the Committee of the B. B. K. A. which would tend to benefit the county associations, to which a deaf ear has been turned by the Central Society; and further, will Mr. White explain what he considers the Central Society with its limited income might do to further the interests of the county associations which it does not do already? As a member of the Central Society I believe our Committee are most anxious to do all they possibly can to foster the growth of and assist county associations. No one, I am sure, regrets more than themselves their inability to respond to the many calls which are made upon them for assistance. Mr. White also states 'half the committee should consist of county secretaries or representatives.' Now, what do we find from the last Annual Report? No less than five county secretaries are members of the Committee, the sub-Committee for county associations' work having two of the most able amongst them; and further, we have it on record that at the last election two other county secretaries were nominated, but declined to serve, one ex-secretary being elected.

There is not much to be said in reply to Mr. A. D. Woodley: he has given us two long epistles consisting of all representation and no taxation.

No doubt, as Mr. White states, there is room for improvement. We have not yet reached the 'millennium.' By all means amend the constitution where it needs amendment, but in doing this let us be careful not to destroy, but to strengthen, its power for doing further good work. When this is done let us hope that we shall still find those well-known names on the Committee of the B. B. K. A. (to whom the bee-keeping industry owes a debt of gratitude) which now appear, together with the names of Mr. A. Woodley and other prominent bee-keepers enrolled amongst the list of subscribers to its funds.—A MEMBER OF THE CENTRAL AND OF A COUNTY ASSOCIATION.

BEST HONEY FOR WINTERING.

[1906.] Repeatedly, during the past ten years or more, have correspondents to our bee periodicals stated that they 'reserve frames of sealed clover honey, to be returned to the bees for winter stores.' Others have seemed to prefer basswood honey, while others have been fully as positive that fall stores were as good if not safer winter food. Only a few weeks ago, replies to a query in the question department of one of our journals showed a great diversity of opinion among several of our leading apiarists. Now, why all this diversity of opinion, and what are really the facts in the matter? And as this thing of obtaining the best winter food for our bees lies at the very foundation of successful wintering, I will give my views, hoping to draw out the ideas of others until some slight advance on our present knowledge be made. I will confine myself entirely to the question of best honey, not touching the feeding of sugar syrup at all, leaving that to those who have had experience in the use of that kind of food.

For reasons not worth while to mention, a large number of bee-keepers will not or cannot use sugar, so this subject of best honey cannot be dismissed by simply giving the advice, 'Use sugar.'

During the first ten or twelve years I kept bees in Iowa, the crop of early or white honey was usually quite small, rarely being one-third of the entire crop, while the yield from buckwheat and fall flowers was abundant. For the last five or six years conditions have entirely changed, so that three-fourths or more of my crop have been white, mostly from the clovers, while the yield of dark or fall honey has been very light. With this change of the honey season came a change in the result of wintering, and the cause had to be investigated. I think that nearly all fruit-raisers have noticed the fact that, as a rule, a full crop meant also a crop of good quality, while a light crop meant also an inferior quality of fruit as well as small quantity. This seems to be a rule of very wide application, the conditions necessary to the production of a full crop seeming to be also necessary to the bringing it to its most perfect condition. This rule, which is so prevalent in the fruit kingdom, seems also to govern in the flower world, in all that pertains to the secretion of nectar. So far as I have observed for a number of years past, whenever any one kind of flowers yields honey largely, especially if the yield is long continued, the quality of the honey is almost certain to be good: while if the yield is light, the quality will be correspondingly poor. Wet and dry weather modifies this rule somewhat, but to a much less extent than I used to suppose was the case.

Several years ago, at the time when my harvest of white honey was so light, I noticed over and over again that, if any colonies died during the winter, it was almost certain to be one which had had quite a quantity of white honey when going into winter quarters; and when I found any combs in the spring containing white honey, even if fully sealed, it was very apt to be more or less fermented, while fermented dark or fall honey was rarely if ever seen. This occurred so often that I finally adopted the rule of management, never to leave any light honey at all in the combs during winter. I stated at one or more conventions, that I had adopted such a rule, but I didn't understand the reason for doing so as well then as I do now. As I have already said, some five or six years ago, the relative yields of early and late honey radically changed, and with it came a corresponding change in qualities, and the immediate result was a serious loss in wintering—not so disastrous a loss as I suffered before using chaff hives, but yet too serious to be at all funny—some forty per cent one winter. This set me to studying as to what was the cause of such a complete change, and I am now satisfied that the whole story can be told in words, 'A change in the quality of the winter stores.'

I noticed, while extracting, that the fall honey was different from what I usually obtained. Had samples of these later crops and of former ones been submitted to experts, I have no doubt that each would have unhesitatingly pronounced one sample as having been taken from unsealed, the other from sealed combs, even when no such difference was the case. The truth is, the samples

would have been entirely different when first taken from the flowers; and no amount of curing, either in or out of the hive, could have made them equal.

I have noticed for a long time past, that the first yield from any particular flower, such as clover, basswood, buckwheat, &c., was almost invariably of poorer quality than the later yield from the same source would be. This is particularly true if the yield continues for some time, say from two to six weeks. It has been not at all uncommon to obtain a better quality of honey, both in body and flavour, from unsealed combs, filled two to four weeks after the commencement of clover harvest, than from sealed combs filled at the commencement of the same harvest. This fact wants keeping in mind when selecting winter stores.

The following is a brief summing-up of the opinions I have arrived at:—That there is no essential difference in the value of different kinds of honey for winter stores: that the relative value of the different kinds of honey varies in localities and seasons: that the particular source which gives us the best yield of honey each season is usually of the best quality: also, that where honey is used as a winter food, much better success will be attained when these facts are observed and acted on.

There are, of course, many other considerations to be taken into account in connexion with winter food for bees, but I have confined myself closely to the point of what is the best honey for winter stores, and I hope others will give their views and see if we cannot come nearer to an agreement on this point which is so vital a one in connexion with successful wintering.—O. O. Poppleton (*American Gleanings.*)

MELLICRATON.

[1907.] The medical receipts of our ancestors are well known to contain some curious and, to our mind, disgusting ingredients. Here is one into which honey entered, and may, on that account, prove interesting to British and Irish bee-keepers, as well as other readers of the *British Bee Journal*. 'The hart of an ape, sod and dried, whereof the weight of a groat drunk in a draught of stale Hunny sod in water, called *Mellicraton*, strengtheneth the heart, emboldeneth and driveth away the pulse and pusillanimity thereof, sharpeneth one's understanding, and is soueraigne against the falling euill.' This will be found in Edward Topsell's *History of Fourre-footed Beastes*, printed in London 1607.—H. W. Leit.

Echoes from the Hives.

Cockburnspath, Nov. 29.—Total failure of honey in Berwickshire. Speaking for myself I have only taken about 30 lbs. from eleven bar-frame and nine Stewarton hives; compared with last year and from fewer hives I took 1159 lbs., have made use in feeding 4½ cwts. of sugar since the middle of September.—James Pringle.

Honey Cott, Weston, Leamington, Dec. 3.—Bees here had a good fly yesterday, so much so that I knew we should have a lot of wet soon, which we have had to-day.—John Walton.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

G. Farnworth.—*Planting Shrubs.*—It is rather late to plant shrubs now, as it should have been done about the end of October and during November. We should prefer waiting until March, and then transplant during fine weather. Pyrus-malus, Mespilus canadensis, cornus mascula, and Westeria sinensis, are all very ornamental and good for bees. We should certainly find a warm place in the garden for Buddlea-globosa, as the bees are very fond of it, and visit it all day long when the weather is fine. You could not plant sufficient heather in your garden to make any appreciable difference to the honey harvest.

Mr. Robinson.—'Willesden card' may be procured at the Willesden Paper Depôt, 34 Cannon Street. We are advised that samples, with prices, have been forwarded to you.

J. R. W., *Natal.*—1. *South African Queen.*—We shall be pleased to receive the South African queen, and trust that she may arrive safely. 2. *Coccidæ.*—We have looked with much interest over the contents of of the two boxes forwarded. The cottony-covered creatures in box No. 1 are, without doubt, a species of *Ortonia*. At a first glance, the similarity of legs, antennæ, hairs, and eggs, seems to show this, but as to the species we cannot yet say. We have prepared drawings and specimens, and have submitted them to Mr. Douglas for his opinion. The box contained a few eggs, not distinguishable from those laid by the former specimens; and we found also a few young ones, just hatched, and quite lively, so that we now are in possession of the early stage. The box was strewed with detached legs of the young, the *débris* of a very numerous family, the cause of whose destruction undoubtedly was a ladybird which had been inadvertently enclosed in the box. This insect was well fed and lively on arrival, but it was something like sending a crate full of young ducks with a weasel enclosed. 3. *Psychidæ.*—The box No. 2 contained two kinds of larvæ, inhabiting cases made of cut stems of grass: they were alive on arrival. We find from inquiries that they are the larvæ of Psychidæ, but which species cannot be determined unless the perfect insect can be obtained. They seem well known, being common in India and China. As to the idea of the Kaffirs of their killing cattle, we do not believe that they can do anything of the kind. Being feeders on harmless vegetable produce, they would not be likely to poison vegetable-feeding animals: then, as they are air-breathing creatures, it is thought that they would inevitably perish amongst the liquids and acids in a cow's paunch or stomach, even if they survived the somewhat trying process of chewing the cud. They will, however, be examined at the Bacteriological Laboratory to see if they contain any germs of such bacilli as anthrax, &c., but the story seems to be purely mythical. In China fowls and other birds are fed upon them, whilst in India and Ceylon they are regarded with superstitious awe from a belief that they contain the transmigrated souls of bad men who, for certain misdeeds in life, are condemned to go about thus carrying a bundle of sticks! This is no doubt as true as the Kaffir tale. German observers know them as 'Sacktragers.' They are still very lively if put into a warm place; but if cold they remain inactive, carefully closing up the doors of their houses before they go to sleep. The small species generally climb to the top of the box and suspend their houses there before they go inside, then they close the doors and remain dormant until warmed up again.

A. R. Baldwin.—*Cane Sugar and Granulated Honey.*—Honey contains different kinds of sugar:—1, cane sugar; 2, fruit sugar or glucose; 3, *inverted* sugar, so called from its turning the plane of polarisation to the left, or inverting the action of the fruit sugar. There is also a fourth sugar evidently distinct, but its nature is not known with precision. Under the action of a ferment contained in the honey the cane sugar changes to sugar of the second and third kinds, and as

these are less soluble than cane sugar, the clear liquid gradually becomes opaque and granular; that is, the honey is said to granulate or crystallise. Honey varies much in its composition according to its age, the rapidity with which it has been gathered, and the different flowers from which it has been procured. You may in some degree deduce from the above to what extent honey in the candied state differs from cane sugar; but as in the different analyses which have been made of honey the amount of cane sugar varies, it does not behove us to speak with assurance. Please repeat the other queries.

A. Turkington.—*Feeding Skeps.*—As the bees bestow much labour in fixing the hive to the floor-board, it is not permissible that these attachments should be disturbed for the purpose of feeding. If there be a hole at the top sugar-cake may be given under a basin or flower-pot, cosily covered up. If without a hole at the top, warm plastic candy may be placed over the entrance, when it will be taken with avidity.

G. Gould.—*Commencing Bee-keeping.*—The position you describe will do for quiet bees. You could not do better than try *pure* Carniolans. We strongly advocate double-walled hives.

Cwch Gwenyn.—1. *Hive-making.*—Allow either $\frac{3}{8}$ or $\frac{1}{2}$ an inch clear between bottom bar and floor-board. 2. *Carr's metal ends.*—These are nice so long as they are kept free of propolis on the ends. The frames you name are not essential to success. If we may offer you a word of advice, it is that you will earnestly endeavour to become a good bee-master and avoid 'fads;' it will be a saving to you of time and money.

J. Pringle.—*Purity of Honey.*—The sample sent is quite pure. The quality is inferior.

A. J. Parish.—*Purity of Wax.*—The wax, sample of which we have received, is pure.

Corrections, page 534.—Alter (*b*) into (*bb*) on the first line from the top. Alter (*c*) within the illustration to (*bb*). And insert the word *not* before *quite correct* on line 14 from the top of the first column on page 534.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin
Appleton, H. M., 256a Hotwell Road, Bristol.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Burtt, E. J., Stroud Road, Gloucester.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley & Flood, 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baldwin, S. J., Bromley, Kent.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Benton, F., Laibach, Carniola, Austria.
Edey & Sons, St. Neots.
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THE

British Bee-keepers' Association

Established 1874.

President: THE BARONESS BURDETT-COUTTS

THE Committee appeal to Bee-keepers, Manufacturers of Bee-keeping Appliances, and others desirous of promoting our Home Industries, to become Annual Subscribers or Donors to any Special Branch of the Association's work.

Subscriptions, 5*s.* and upwards per annum.
Life Members, £5.

The Association carries out its work by—

The holding of Annual Exhibitions;
Assisting County Associations;
Sending out Lecturers and Experts;
The publication of Literature relating to the best methods of Bee-culture;
The disposal of Bee-produce, &c., &c., &c.

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THE BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, TOWER STREET, Cambridge Circus, W.C.

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Editorial, Notices, &c.

COUNTY ASSOCIATIONS AND THE B.B.K.A.

We have much pleasure in calling the attention of our readers to the following excellent article from the *Record* of this month, and commend it to their careful attention. We do not wish for obvious reasons to enter into the discussion at the present moment, but we would like here to point out one fact which seems to have escaped the notice of all those who are asking for county representatives on the Committee of the Central Society, and that is, that nearly all the present members of the Central Committee are members or on committees of County Associations. With the article of our contemporary we are in perfect sympathy, as in it the whole question is discussed in a calm and unimpassioned spirit.—ED.

Not without serious misgivings do we gather from what took place at the recent quarterly meeting of the British Bee-keepers' Association, and from subsequent correspondence in the columns of the *B.B.J.*, that a rather alarming phase in the politics of bee-keeping has been reached.

Ever since the *Record* has been guided by its present Editors, it has been our rule to avoid, as far as possible, entering into controversies of this kind; but when we see small disagreements among good friends of the cause which are likely to develop into more serious dissensions if not checked in time, it behoves all who care for the prosperity and well-doing of what we love to call 'our hobby' to use every endeavour to restore that unity of effort on the part of the powers that be, without which failure is inevitable.

In this spirit we depart from our established rule, not with the intention of joining in any lengthened controversy on the subject—that may be left to others, and to more suitable channels for discussion—but with an earnest hope that a word of well-meant advice may, like oil cast on troubled waters, tend to soften down differences which seem to us more apparent than real. It is no secret that matters have not worked quite smoothly of late between the committee of the central body and the gentlemen who are chosen to represent County Associations affiliated to it. The latter consider they have a substantial initial grievance, in that the committee of the B. B. K. A.—who, no doubt, are guided by rules laid down—do not treat them with sufficient consideration, and that the position they occupy at quarterly meetings is not consistent with the importance of their position as representing a large and influential body of bee-keepers. This, however, is a comparatively small matter and would soon be put right; but there are more serious differences of opinion with regard to the powers conferred on the committee, and it appears to be the object of the 'reformers' to try and introduce such changes in the constitution of the B. B. K. A. as will, in their opinion, infuse new life and vigour into the parent society, and laterally into all associations under its control.

From the published accounts of what has already taken place, and, aided by some small amount of light from 'behind the scenes,' it appears to us that the most serious change contemplated is the proposal to make County Representatives *ex officio* members of the executive committee, and giving them an equal vote with committeemen elected in the usual way. This involves so wide an extension of the franchise that it would, if carried out in its entirety, completely revolutionise the present constitution of the Association, seeing that its elected committee of management might be outvoted on any question, whenever the county representatives decided to oppose them. On this ground we may reasonably expect that the general body of the members of the B.B.K.A. will endeavour to modify the proposed arrangement in some way, rather than consent to the transfer of the government of the Association to new hands; and our advice to the—shall we call them malcontents is to agree to a compromise, and to both parties we say, 'Bear and forbear.' By so doing we feel sure that a plan may be devised allowing something like equal power to each. As already said, we believe the objections to the new plan to be more apparent than real, because, when it comes to practical working, our view is that the power of governing the Association is likely to remain in the hands of the ordinary committee as before. Except when matters of unusual importance are under discussion county representatives will surely never be expected to attend meetings held in London monthly. Those from northern counties find it more than enough to put in an appearance quarterly; and so we expect the new voting power will seldom be exercised in the transaction of ordinary committee business, and more seldom still on that of sub-committees.

What we deprecate most earnestly is anything savouring of a policy of exasperation, which would surely tend to alienate many influential friends of the cause, who have hitherto been its chief support and mainstay. We have a strong impression that many members of the present committee would gladly retire and leave the work to younger and more active men, if they could be assured that the future of the Association would not be imperilled by their retirement. We may be wrong, but this is our impression, and we certainly share in the feeling if it exists. No one can, as we think, honestly doubt that a great deal of such public importance as we can ever hope to see attached to a minor industry like bee-keeping, is due to the social position of its present patrons, and those who take an active part in promoting its work among the humbler classes of the community. It is also an undisputed fact that the committee of the B. B. K. A. is composed of gentlemen with no personal

interests to serve, and whose motives are above suspicion; they have given a large amount of time entirely for the good of others, seeking no reward other than to see the cause prospering: and we would ask those who would improve the committee by making it 'more democratic,' if they consider the democratic element more likely to be unselfish in their motives than those who up to the present time have carried on the work?

Hence we say, if the power is to be transferred practically to the County Representatives, care must be taken that the most influential gentlemen it is possible to secure are selected. Not that we imagine that honey-producers, appliance-dealers, and bee-traders, are less disinterested or less selfish than other men or less worthy of public confidence, that is not the point at all; but we do know that dissatisfaction will be sure to follow, if, for any reason, the executive committee is not entirely above suspicion.

The second important change proposed is, that any Bee Association, whether a County Association or not, be received into affiliation with the central body, on payment of the usual fee, and undertaking to publish a properly audited statement of income and expenditure in conformity with the rules of the B.B.K.A. A third proposal—which, with one or two minor matters, completes the programme of reform aimed at—specifies that at all shows held under the auspices of associations affiliated to the B.B.K.A. not less than two-thirds of the prizes shall be offered for open competition. This, by the way, is a very admirable suggestion, as it will effectually prevent a frequent source of scandal, where small associations are suspected of distributing the bulk of their prizes among the members of their own executive. In endeavouring to follow the various arguments used by the 'reformers,' we find that some uncertainty exists even among themselves as to the aims and objects they have in view. At least, the Editor of the *Berkshire Bee-keeper*—himself one of the most energetic opponents of the B.B.K.A. committee as at present constituted—by inference takes the Rev. J. L. Seager to task for endeavouring to sacrifice the County Associations for the benefit of the parent body.

This is rather hard on Mr. Seager, seeing that he is the one member of the committee who goes in heartily for reform, in opposition to most of his colleagues; and earnestly desires to see new life infused into what some call the 'dry bones' of the central association. The Editor of the *B.B* is also entirely wrong in supposing that the committee of the B.B.K.A. are desirous of suppressing county associations. He says:—'It is the "British," it turns out, that is in a "bad way," and the County Associations are to be sacrificed for its benefit. There is one all-important view of the case which strangely does not appear to have presented itself to those complacent would-be disposers of the fate of the County Associations, viz., that of the County Associations themselves. Are they so sure that the associations will tamely submit to the dictation of a body in the control of whose affairs they have little or no voice?' If, as we understand it, affiliated associations receive in cash value more from the B.B.K.A. than they bestow in affiliation fees, with what justice can the committee be accused of sacrificing Counties to increase the number of affiliated societies for the benefit of the 'British?'

As a matter of fact the committee appear to have no desire to sacrifice any association. The proposal to admit non-county associations into affiliation comes from the reformers themselves, and is one of the points of their programme.

We agree that, to suppress county associations and establish in their stead a number of weak little bee societies or clubs, would be a retrograde step of the worst kind; but it does not seem likely that this will be the result. Probably a few strong non-county associations will spring into life where the surroundings are especially favourable to their development; but good, well-managed County Associations will be able to hold their own, for obvious reasons.

Our main purpose, however, in referring to the subject under discussion is to offer a word of advice to the more active spirits, through whose instrumentality, we believe, some much-needed reforms will eventually be carried through. To these we say, Don't go too far! and don't go too fast! Above all, do not forget that the gentlemen who are now at the head of the bee-keeping movement have laboured as hard and as effectually as the best and most earnest of you in past years to promote our pursuit. They have spared neither their time nor their money, and have looked for no other reward than the general good of the community. As already said, we must not shut our eyes to the fact that it is because gentlemen of influence and high social position have associated themselves with bee-keeping, and have taken an active part in the work, that we owe a great portion of what strength there is in the movement. We desire, as earnestly as any one, to see an infusion of new blood into the management of the parent Association, and we believe that a little of the democratic element will be an advantage; but we must earnestly protest against anything tending to alienate the present committee, and perhaps cause them to throw up the care and worry which its duties entail. Some measure of reform is needed, we admit, but when it comes to transferring the power entirely and completely from one set of bee-keepers—and they the oldest and most experienced—to another; many of them just now full of that delightful enthusiasm and hopeful zeal which is a more or less pleasant memory of the past to us veterans; we say, *Don't!* 'Bear and forbear' should be the guiding motive; wisdom will not die when the present committee disappear; neither will all the talents be embodied in a committee of new men, if such be tried; but if the discussion of the vexed questions now disturbing us be carried on at the coming annual meeting in a spirit of mutual concession, we believe that a strong and efficient executive may be formed which will cheerfully carry out any new measures likely to benefit the cause we all desire to see benefited.

Our personal interest, as representing the *Record*, is identical with that of all bee associations; among their members are our correspondents, and to a large extent our subscribers. It may therefore be taken for granted that our sympathies are entirely with the County Associations and their work, but, to enable the counties to do the work well, there must be some cohesion: and, besides this, it is still more important that there be an influential central governing body at the head of all, with sound laws to the observance of which all will heartily conform. The more representative this body is the better, and it seems but reasonable that associations duly affiliated should be entitled to representation on the committee. At the same time the fact should not be overlooked that the members of the 'British' who subscribe—many of them liberally—to its funds, have an equal claim to a fair share in the voting power of its own executive committee. These simple facts duly borne in mind, and just a little conciliatory spirit infused all round, there should be no difficulty in restoring harmony among gentlemen having but one object in view, and that 'the greatest good to the greatest number.'—W. B. C.

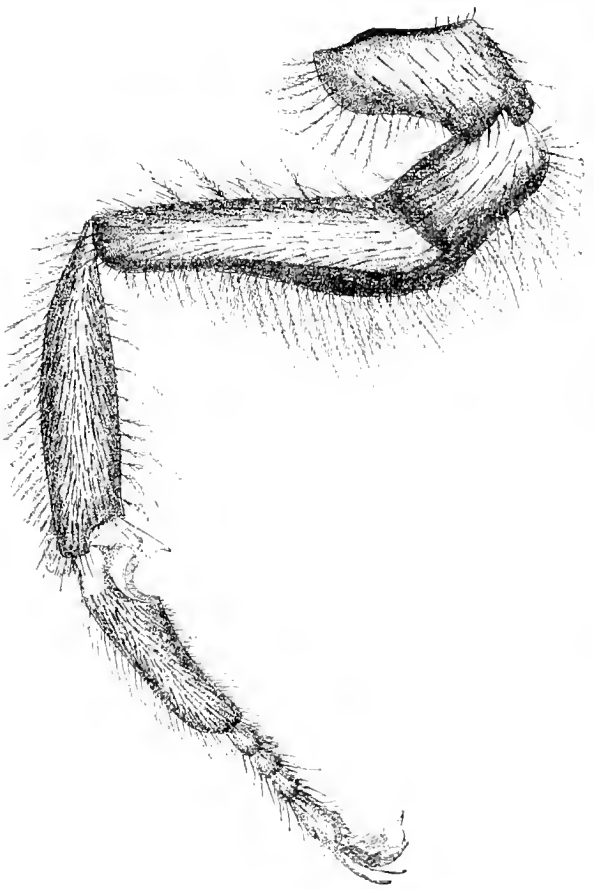
Mildness of the Season.—In a letter, dated Harmston, Lincolnshire, December 7th, Mr. R. R. Godfrey writes:—'I enclose a few flowers which I gathered in the fields this morning, and upon which I found bees in numbers.' The flowers enclosed were,—Daisy (*Bellis perennis*), Mustard (*Brassica alba*), Common Bean (*Faba vulgaris*), White dead-nettle (*Lamium album*), Red dead-nettle, (*Lamium rubrum*), Jagged Cranesbill (*Geranium dissectum*), Doves-foot Cranesbill (*Geranium molle*).

THE ANATOMY OF THE HONEY-BEE.

Anterior Legs of Bees.

(*Continued from p.* 589.)

Next to the posterior legs the anterior are most interesting objects of study. The first three joints of these legs (see Fig. 1) are not essentially different from the same in the posterior legs. The compound hairs are abundant, and, as seen in the microscope, are very beautiful. The tibia is not modified, as seen in the posterior legs, but has a strangely modified tibial spur, Fig. 2.



The front leg of a bee, with enlarged view on the right.—Fig. 1.

This resembles a short-handled knife. The part answering to the blade is strengthened at the base by a sort of knob; it is wide and blunt at the end, with a projecting point at the back. The inner part of this blade consists of a soft membrane, just such as we should like to use as a duster. This modified tibial spur is found in all hymenoptera, though it is greatly varied in different families and genera, and may be wisely used in classification. Thus in *Nomada* the membraneous blade is quite distinct from the back portion of the spur, which is continued in a long spinous point. In two families of wasps, *Sphegidæ* and *Pompilidæ*, the edge of the blade is fringed with a beautiful delicate brush, and in *Sphex* the end is deeply notched, so there are two points, between which are several finger-like projections. In the ants there is a double row of this exquisite fringe, making a brush that is most beautiful, and the blade extends in a graceful curve to a beautifully fringed point. The membraneous blade is seen, even in saw-flies, which are among the lowest of this most interesting order of insects.

Just opposite of this tibial spur in the worker-bee, on what might be called the elbow of the tibia, is a most delicate brush, Fig. 1, just such as the bee could use very conveniently and effectually as an eye-brush.

The basal tarsus is also broadened in the anterior leg, and contains a hemi-cylinder at its base which is smooth on its inner surface, but contains on its outer margin some seventy or eighty teeth, or spine-like hairs, much the same as those seen on the blade of the tibial spur of the sphex wasps. This comb-like cavity is exactly covered by the blade of the spur when the joints are placed the one upon the other. Thus we have in this exquisite apparatus the antenna-brush, or cleaner. It is found in the drone and queen, as well as in the workers. The cavity is found in all bees and wasps, and in all hymenoptera, if we except the lower families. In the gall-flies, cynips, saw-flies, and some others, the cavity is not even suggested, though, as before stated, the membraneous blade in the saw-flies shows that the arrangement is not wholly obsolete in these insects.

The function of this curious apparatus as an antenna-cleaner is easily determined. We have only to take a bee or wasp by the wings, and dust its antennæ with chalk or flour, and then put it on the window of our room, when it will be observed to rub its anterior legs over its head; and by close attention, especially with a small lens, we can easily see one antenna and then the other passed through the antenna-cleaners, and soon we shall notice that the dust has all been removed.

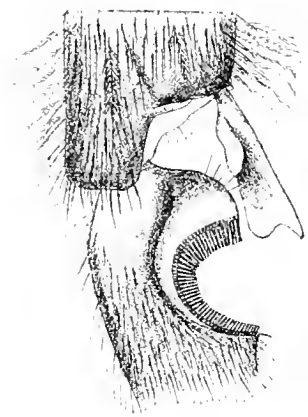


Fig. 2.

After the bee has passed its antenna through the cleaner, it takes the leg used and draws it through between the basal tarsi of the middle legs. These tarsi have pollen-combs of stiff hairs on the inside, and thus the antenna-cleaners are in turn cleaned. I have found that many wasps vary this last operation. They pass the forward, or anterior legs, between the mandibles, or jaws, just after they are used to clean the antennæ, and so the antenna-cleaners are cleaned by aid of the jaws rather than by use of the middle legs. By closely watching a bee as it backs out of tubular flowers, we have a fine opportunity to see it use these antenna-cleaners in freeing its antennæ of the pollen.

I have become very much interested in studying these peculiar organs. I believe in many cases we could, simply by studying these organs, place the bees, wasps, &c., in their respective families, and, in many cases, in their genera. Nor should we wonder at this. The antennæ have been shown by entomologists to act as organs of smell, and we all know that they are most delicate tactile organs. How necessary, then, that they should be kept free from anything that would dull their sensibility! We should expect, then, that, as these organs have been developed, they would be modified to correspond with the habits of the insect. Some of the bees and their allies work only in the pollen dust; others dig in the earth, or gather mud, while others bore in wood, &c. Thus each would require a different style of brush to free the antennæ of taint. Those that use the jaws to clean the cleaners would doubtless have a dif-

ferent style of cleaner than would those that use their legs for this purpose. Again, the higher the instincts, or, better, the higher the intelligence of the insects, the better or higher would be the development of such important organs as the antennæ. Likewise, any other organ like this antenna-cleaner which is related to the antenna, would be more or less highly developed, to correspond with the complexity of the antennæ themselves. Hence we do not wonder that these beautiful organs are of great use in our systematic study of this most interesting order of insects.

The middle legs are peculiar only in the possession of the sharp tibial spur and the beautiful pollen-combs on the inside of the basal tarsus. These latter are formed of stiff hairs, like those on the posterior legs, except that the arrangement in rows is absent.

It has been suggested that this spur has been used to pry off the pollen-masses from the worker's legs as they push this pollen into the cells of the comb. The fact that queen, drone, and all others of the hymenoptera, have this spur even better developed than do the worker-bees, as also the fact that the stiff hairs on all the four posterior legs are better adapted to perform this office, makes this view doubtful. The combs not only aid in removing and transferring the pollen to the pollen-baskets, but, as we have seen, they serve to clean the antenna-cleaners, and also to push the pollen-masses from the posterior legs into the comb-cells.—A. J. Cook, *Agricultural College, Mich.* (*American Gleanings*).

WITH THE AMERICAN BEE-KEEPERS.

By Thomas B. Blow, Welwyn, Herts.

(*Continued from p. 575.*)

Watertown, Wisconsin, U.S.A., Nov. 4.

After a few more pleasant days spent in fishing and shooting on Lake Ontario, which is quite near here, I started by way of Niagara Falls to see Professor Cook.

Prof. A. J. Cook.

The railway companies stop all trains for a short time at Falls View, and one gets a fine view of the Falls from the Canadian side. I had heard that many were disappointed with the Falls at first sight. I certainly was not. The scene is very grand, and the surroundings very picturesque. A long rail journey through Canada —where, by the way, nothing seems so flourishing as in the States—the farmhouses so well built and surrounded by orchards and gardens there, here give way to smaller buildings, and the culture of the land seems not nearly so good; and on inquiry I found that things generally were not so well as in the States, where the first impression one gets is that of very general prosperity—brought me to Detroit, and thence on to Lansing, to the State Agricultural College of Michigan, where Professor Cook has charge of the departments of zoology and entomology. It is a very fine institution, situate about three miles from the town, and here everything that can possibly pertain to agriculture is thoroughly taught.

The advantages offered are eagerly sought after, this shrewd people knowing that their sons stand a greater chance of success in the battle of life so thoroughly equipped with all the knowledge here to be acquired. The grounds are of great extent (676 acres), very beautifully laid out, and the Red Cedar River runs through them.

I was very warmly welcomed by Professor Cook, who is one of the most genial men that I have ever met, and one is instantly at home with him. My stay was short, which I much regretted, as there is so much to learn here.

A new edition of the well-known *Manual of Bee-culture* had just been issued, and the why and wherefore of the alterations and additions were fully discussed, this edition having been completely remodelled and brought up to date. Hives and appliances we did not much discuss, though I was surprised to learn that in Professor Cook's opinion the Heddon hive was the best ever brought out and destined to do great things in the future. The Professor was also surprised when I told him of its complete failure to attain popularity in Great Britain. The apiary was close by the residence of the Professor, having quite recently been removed there, and here many experiments, in the way of improved races of bees, have been made. At present Professor Cook inclines to a cross between Syrian queens and Carniolan drones. We had a long talk about these matters, in which I am greatly interested. Professor Cook, in common with all who have handled the Eastern races, found that though the Syrians had many fine qualities, yet they were far too fierce to handle with any degree of comfort, and to get over this fault he crossed with Carniolans, with, at present, a fair result. He intends to experiment further with Carniolan queens crossed with Syrian drones, and I am much interested to learn his opinion of these as I think he will be much more satisfied with them than with his present race.

The matter of growing plants for honey has here received great attention at the hands of Professor Cook, and some of the results are decidedly encouraging. Land here being so plentiful and low-priced, it may be possible to use it for such purposes solely, but I fear it would not pay with us.

The visit of an European bee-keeper is here quite an event, and Professor Cook spoke of the enjoyment he had from the company of Mr. Cowan, who paid him quite a long visit last year. He looks forward to coming to England in the course of a year or two, and I could only assure him that the welcome he would receive would be of the heartiest possible nature.

(*To be continued.*)

GLEANINGS.

A great deal has been said and written about bacteria, and on the germ theory were supposed to be based most of the diseases found. The scare even reached bee-keepers, but if they will only wait they will find many of the bacteria supposed to be deadly are perfectly harmless. Already many have gone to the ground, and

even the so-called cholera bacillus proved to be a harmless one found in the mouths of healthy persons. Now, according to the *Belgian Microscopical Society's Bulletin*, Dr. G. Van Ermengen has been experimenting with Scheuerlen's cancer bacillus on dogs, guinea-pigs, and rats, and has found it harmless. Pure cultivations were injected, and after two months all the animals were quite well. Dr. Ermengen finds the so-called cancer bacillus an organism very common in the air, dust, soil, &c., and states it is non-pathogenic.

The *American Bee Journal* says:—Professor N. W. McLain, of the Government experiment station at Dinsdale, Ills., has been appointed superintendent of the apiarian exhibit of the Paris exposition to be held in April, 1889, and he is now making preparations to gather together the largest and best exhibit of bees, honey, apiarian supplies, implements, and their process of manufacture, that has ever been made.

In the *Canadian Bee Journal* the editor gives his experience with foul brood, and says:—'Last season we experimented with phenol, as did also Mr. A. I. Root, and neither had the success which would enable us to recommend it as a permanent cure. It did relieve, and to a certain extent cure, the colonies affected, but we could not depend upon it as lasting.'

In the *American Agriculturist* A. H. Duff in an article on wintering bees says that the most inexpensive and best method is to pack in chaff on the summer stands. He thinks that the more packing the better it is for the bees, and has found that those having four inches of packing all round, and twelve inches above, have always given better results than those having less. He advocates a separate shell in which to place the chaff, and slips this on and off as required. An opening is left at the entrance, so that the bees may come out in suitable weather. The covering over the bees, and directly under the chaff, should consist of a cloth only, and no board or wood covering should be used. The cloth will allow the moisture arising from the bees to pass off, and the chaff above will absorb it, and thus keep the colony dry. Should the bees want stores in winter, a frame of honey can be given, or slabs of candy can be placed over the cluster in the frames. Feeding syrup of any kind must be avoided during winter.

In the *American Apiculturist*, H. Alley says as some colonies need more sugar than others to carry them through the winter he has found no better rule for preparing the syrup than this: If a colony will need, say, fourteen pounds of sugar, place that quantity in any kind of vessel. Now mark on the inside of the vessel where the top of the sugar comes and add boiling water until all the sugar is wet and the water rises to that mark. Stir the mixture occasionally until all the sugar is dissolved, then add a pint of water and two pounds of honey. The syrup will be slightly thinner than it should be to cap, but the small quantity of water it contains will soon be evaporated by the heat of the colony. The honey added will prevent the sugar from granulating and make the syrup more palatable to the bees. Those who use this receipt will not complain that syrup granulates in the combs.

We find in the *American Bee Journal* that C. E. Woodward, writing about the production of fancy comb honey, recommends the English plan of fixing foundation on the sides. This is what he says, 'If bee-keepers wish to obtain fancy prices, they must obtain fancy honey. How can we obtain fancy honey? Simply by using starters in the sections? No, I think not. Fill the sections half full? No, I would not. I would fill the sections full of foundation, and fasten the foundation to each side of the section, not at the top, and leave a bee-space at the bottom, for the bees will take care of that part. I have tried and experimented with all the ways, and I like the above way much the best. The sections are filled flush and full at the four sides. All of my honey sold for 15 and 15½ cents per pound, while others obtained 12½ and 13 cents per pound in the same market. This is the way I obtain fancy honey and fancy prices.' Our readers will at once recognise this as the method always adapted with Lee's sections, and for some time practised by English bee-keepers.

ASSOCIATIONS.

IRISH BEE-KEEPERS' ASSOCIATION.

The Committee met on the 4th inst. Present: Mr. Sproule (in the chair), Mr. Read, Mr. Gillies, Dr. Knight, and the Hon. Secretary. The Secretary reported that the Royal Dublin Society had agreed to the proposal that they should give prizes for hives and other bee-keeping appliances at their next spring show, the Association contributing 5*l.* towards the expenses, and that the schedule of prizes proposed by the Association had been accepted. A sub-Committee was appointed for drawing up the Annual Report.

WOTTON-UNDER-EDGE ANNUAL MEETING.

The members of the Wotton-under-edge district B.K.A. held their third annual dinner on Wednesday, November 28th. About thirty sat down to an excellent dinner. After the loyal toasts, the chairman (Mr. C. M. Penly) submitted the visitors, coupling with it the name of Mr. W. D. Slade, who came down from Cheltenham for the occasion. In responding, Mr. Slade spoke at some length on bee-keeping, which was listened to with much interest. The health of the local Secretary was drunk with musical honours. In responding, Mr. Brown thanked them all for the kind way in which they drank his health. He also hoped he should see as many members at their monthly meeting as there were there that evening. He was glad to say that the meetings were doing good work.

LINCOLNSHIRE BEE-KEEPERS' ASSOCIATION.

A preliminary meeting of the above was held at Mr. H. S. Forman's, Upgate, Louth, on Friday, the 7th inst. Mr. H. C. Smith presided. Letters were read from several gentlemen regretting their inability to be present, but wishing every success to the movement. Mr. J. H. Houghton, F.R.G.S., of Louth, was, on the motion of the chairman, seconded by Mr. John Dales, appointed Secretary of the Association.

After a discussion as to the desirability of resuscitating the Association, and the reading of a number of letters, all of which strongly recommended this course, the following resolution was unanimously passed, 'That in the opinion of this meeting it is desirable to reorganize the Lincolnshire Bee-keepers' Association.'

A code of rules and regulations, based upon those of the old Association, and which had been submitted to Mr. John Huckle (Secretary of the British Bee-keepers' Association) for suggested additions or curtailments, was then discussed, and, with some slight alterations, passed.

It was decided to ask the President and Vice-President of the old Association to retain their positions in the new Association. Several names, however, were added to the list of Vice-Presidents. Several names were suggested as acting Committee for the coming year. The Secretary was instructed to communicate with the gentlemen named, and when he had received replies, call another meeting.

We believe, from the tone of this meeting, that a very successful Association will be formed.

[We desire to congratulate those who have taken a part in the above movement, and trust that success may attend their efforts in reorganizing the Lincolnshire B. K. A.—Ed.]

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements).*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

MINORCAN BEES.

[1908.] Although not in a position to give information as positively as I should like to do in some respects, I am able to bear out the truth of one of the characteristics with which they have been credited by Mr. Andreu, and that is, their propensity for breeding. Owing to the bad weather and my own indisposition my bees, although well fed from the beginning of July, were not finally overhauled until November, when, during several fine days, every impervious quilt was removed, and the bees, so far as I was able, were carefully packed for winter. I was assisted by an able expert, and when we came to the stock containing the Minorcan queen I prevented the use of everything in the nature of a pacifier, and determined to see what the bees would do under ordinary handling. We wore veils but no gloves, and we examined the whole of the combs, beginning at the back, and scraped and cleansed the frames and all the inside of the hive, returned everything to its place, except such combs as it was determined to withhold, and covered them up to stand the winter without having received a single sting; and hence I am inclined to believe that the characteristic 'gentleness' may be added to that of 'prolificness,' when speaking of the merits or demerits of Minorcan bees. The November examination revealed the fact that four Minorcan queens in Combination hives were still laying, and had patches of brood, the original having five combs fairly stocked with eggs, sealed brood, and hatching bees, all surrounded with ample stores in first-rate order. C. N. ABBOTT, *Southall, Dec. 8th*, 1888.

[We have been informed that Mr. Blow noticed the propolisation at the entrance of the hive of Minorcan bees in his apiary at Welwyn on July 19th. His Minorcans have left three spaces through which they enter the hive.—ED.]

COUNTY ASSOCIATIONS.

[1909.] Undoubtedly, if Mr. Seager has done nothing more, he has succeeded in raising the whole question, not only of County, but also of the British B.K.A., and I feel sure that good will come out of it, for it is far better that evils, if they exist, should be discussed in the light of day than that they should smoulder in darkness.

I will, with your kind permission, notice one or two references to my previous remarks. To the writer of 'Useful Hints' I can only say that, notwithstanding his Latin quotations and ambiguous references to the discussion, I will yield to none, not even to the able writer, in wishing for the welfare of the British B.K.A. In speaking only for myself, I feel sure that I am echoing the sentiments of those other gentlemen who have taken part in the discussion. I feel sure that in every effort successfully made to improve and strengthen our worthy parent we are in a great measure helping forward the cause of the County Associations in which we are all deeply interested. I had hoped that some member of the British Committee would have entered the arena on their behalf earlier, but I am glad that 'A Member of the Central Committee' has at last broken silence, though I regret that he has felt it necessary to shield his name under a *nom de plume*. It appears from his opening remarks that, although within the charmed circle, he has not yet discovered that the bond of sympathy between the British and County Associations is unduly strained. Perhaps it would be more correct to state that bond is being loosened, that the cause is more of a negative than of a positive nature. Your space, Mr. Editor, will not admit of my furnishing 'A Member of the Central Committee' with a lengthy illustration of my argument, but it exists, as is borne out by almost all your correspondents. He alludes to the fact that a certain proportion of the British Committee being County Hon. Secretaries. Quite true, but our point is that they should be sent there by their respective counties: they are on that Committee by virtue of the weight of their private subscriptions and personal influence, and not by the affiliation of their respective counties. It seems to me that the great bone of contention is the qualification necessary to get on that Committee and the want of voting power by the county representatives. I feel sure that when these two points are considered the difficulty will be in a great measure removed.

The British B.K.A. will be stronger from the fact that it will speak with one voice on behalf of the whole body of bee-keepers in the country, and the result will be that the counties will rally to the support of the British, both morally and financially, from the fact that they would form an integral part of the same. I quite agree that great care should be taken that any alterations should not be of a destructive nature, but rather to strengthen; and if the above change were made that the B.B.K.A. would strengthen; and I believe that, if such were the case, every one of the present Committee would be elected, and they would be supplemented by colleagues from all parts of the country enabling them to speak with an united voice. That being so, I feel sure that, grant the representation, the counties will bear the necessary taxation.

Like our little friend, the sting of your correspondent's letter is in its tail. He hopes that my name will be among the subscribers to the funds of the British. I can only say that, limited as are the world's goods at my disposal, when I see the British B.K.A. take up the position in respect to the national bee-keeping question to which it is entitled I shall be most happy to give my mite to its support, but until then, like many others, I prefer to give it to my own County Association.—A. D. WOODLEY, *Reading*.

FEEDING AND PACKING FOR WINTER.

[1910.] Replying to suggestion of 'Useful Hints' in *Journal*, I give a little of my experience and practice this autumn. At the end of July I had taken only very few sections, not one of which was fully finished, and only fifty or sixty pounds of extracted honey, while many stocks (notably those that had Carniolan-bred queens, mated with Ligurian drones) had any amount of bees, but no honey, although when the weather was very bad, they had been fed the same as other stocks. Other Carniolan stocks were much the same, or very little better; they had increased enormously, and had been swarming mad all the season. So much so, that I could not help remarking, that my English and Ligurian stocks had better sense, as I only had one stock of Ligurians, and not one stock of English bees, swarm at all. I do not say this about the Carniolans to run them down, as I have been well satisfied with them in good seasons (I have kept some for over ten years), they beat either English or Ligurians in the quantity and quality of the honey gathered, more especially in the appearance of the comb honey. Of course in such a season as the one just past their very prolificness has been against them.

As regards feeding up for winter the difficulty seemed to me, how to keep the bees alive, and yet not have to keep so many old bees that would naturally die in the course of a few weeks. I fed them only just enough to keep them from starving through August, and then in September began to feed them up for winter. Here I may say that I made my syrup—or rather my wife did—by pouring boiling water on granulated sugar, with just a bit of salt added, and stirring till it was all melted. It was made as thick as it possibly could be, so as to melt all the sugar; but it was not boiled at all—too much of a job for that—and it was wanted at once, and a lot of it, too. I fed the majority of the stocks with quart pickle-bottles turned up on some rather fine perforated zinc, taking them by turns, so that I fed the same stocks about every third night; a few I fed up in about four nights each, using one of Simmins' circular tin-feeders, which hold about seven pounds of syrup. I thought I would try some of Meadows' first-prize rapid feeders, as I had no time to make any myself. I could not get to see many things for the crush at the Royal at Nottingham, so did not see the 'rapid feeders'; I sent for three of them, but did not like the look of them when I had got them, or the thought of having to pour the syrup in while there are bees in the feeder: there appeared to me to be no means of the bees getting away quick enough without getting daubed: so I returned them and requested Mr. Meadows to send me one of the circular tin feeders of Simmins' similar to the other one I have. He exchanged them, but made the remark that he thought I was 'behind the times;' however, if that was the cause, I certainly would prefer to be so.

Another wholesale feeder I used was one of Simmins' dummy feeders, a wooden one, which holds seven or eight pounds of syrup, which I filled about four times for each stock I fed with it; but it was not so handy, especially when I wanted to move it to feed another hive, as it took so long to get the bees out. I certainly prefer the circular tin feeder, because when it was required to be moved to another stock, I could take it off from the feed-hole and shake the bees out in no time, then it was ready to be placed over the feed-hole of another stock to be used again, and nothing required to be disarranged about the quilts. I never found any difficulty about its being too cold being of metal, as some might think, I did not always feed with warm syrup, only when it happened to be freshly made.

I took as many spare combs away as I could when I first began to feed, but was obliged to leave ten or eleven frames in some hives, there was such a number of bees. Here, again, in giving some young queens in place of old ones, I found the difficulty, as 'Useful Hints' said about the bees taking to fresh queens while being fed, also in opening hives, which I was obliged to do either first thing of a morning, or just before dusk at night.

After feeding up most stocks with from twenty-eight to thirty pounds of syrup each, I began to pack them for winter. I do not use chaff at all, having had a bother with it years ago through using it loose upon the hives, and at back of the dummies. I think I mentioned in 'Queries' about using green blind stuff upon the frames, not particularly because I think it better, but because I got a lot of old blinds cheap, and they answer the purpose very well: over this stuff I place about three thicknesses of scouring flannel, and on the top of that a couple of folded rice or sugar bags: if sugar bags, they had to be washed before being used; in some cases old woollen counterpanes are folded and laid on instead of bags, also at back or sides of dummies the spaces are filled in with the like materials. As a rule I only have the entrances about two, or at the most three inches long by about ⅜ inch high, though I did think of opening them a little wider for winter, but the mild weather coming on again and continuing so long, it does not appear advisable, as I find on looking round the bees are on the look-out to try to rob if they could get a chance, and with entrances full width it would only entail more work for the bees to protect themselves.

I think I have given my plan of feeding, packing, &c., as near as I can do it. I do not claim that it is better than any other, or that it is the best way, but I generally get my bees through the winter pretty well, and ready for the honey flow the next year—when there is one.

I have always read the writings of 'Useful Hints' with great pleasure and profit, and hope he will long write for the *Journal*, as I am well aware *he knows of what he writes*; also 'Amateur Expert,' I trust he will continue to jot and enliven us with a few of his spicy sayings, a bit of humour does us good sometimes, only he must mind and not tread on folks' favourite corns.—JOHN WALTON, *Honey Cott, Weston, Leamington.*

BEE-KEEPING IN RUSSIA.

[1911.] Please accept my best thanks for sending me your 'Wintering Bees,' and for your kind attention in sending the 'Apifuge.' I cannot take advantage of your good intentions to send me more, for I have the address of the dealers of this liquid, and, having obtained it, I tried it once. But being accustomed as I am to the stings of bees, without, however, neglecting the gentle behaviour and politeness due to them, I quite forgot to notice the effect of the essence with which I was perfumed.

Our bee-keeping increases more and more in experts, more especially amongst schoolmasters, to whom I dedicated my book, *Pchelovodstvo*. I am pleased that I aimed at directing my instructions in bee-keeping to this class of people who are needy and intelligent, and without occupation during the summer.

I am glad to know that you have given up perforated zinc excluders. According to my ideas, its necessity arises from the whim of inventors of long shallow frames, as it diverts the natural inclinations of the bees to store honey above the brood-nest, which is admissible when the height of the hive is sufficient.

It was with great interest that I read in your *British Bee Journal*, 1888, No. 325, p. 449, the different methods of covering the frames. It appears to me that the essential merit of such a covering does not consist so much in the nature of the stuff used as in the space which separates it from the frames, so that the bees can neither propolise nor gnaw through it. To attain this end, I have tried successfully a woollen covering with wooden laths (one inch wide) nailed at certain distances apart on both sides of this material, and with separators between them, such as small pieces of zinc, bent square, and nailed to the laths on the underside, in order to raise the covering to between a quarter and three-eighths of an inch. At the same time this allows the bees a passage over the frames. For the winter keeping on the super I place on this covering a layer of dried leaves (see *B. B. J.*, No. 330, p. 512).—A. DE ZOUBAREFF, *St. Petersburg, Nov. 17th.*

NOTES ON BEE HIVES.

SECTIONS WITH ARTIFICIAL ATTACHMENT CELLS.

[1912.] During the past summer I have been making some experiments upon the above, which I can report very favourably upon without further trial. I will at once say my custom is not to mention a thing until I have fully tested it. I shall be glad to hear if any bee-keeper has tried the above fully, with a description of their method of working and the apparatus used. By means of engraved rollers, I had attachment cells made on all the four inner faces of $4\frac{1}{4} \times 4\frac{1}{4} \times 7$ to the foot sections: and although the season here was of such an

unfavourable kind for good work, the results enable me to state the above is well worth a fair trial.

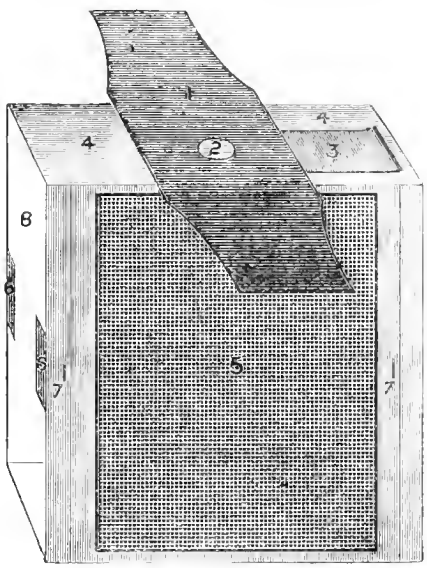
I am opposed to using full sheets of wax foundation in sections, or even the usual triangular strips, and am of opinion that such is not absolutely necessary to secure perfect sectional honey, and also that there is no profit in using wax-foundation for sections, notwithstanding the mathematics which have so often been paraded.

I find one of the largest English apiarian suppliers cannot retail Dadant's thin foundation under *8s. 3d.* per pound, and Dadant's extra thin super or surplus foundation under *3s. 6d.* per pound, cut into the exact size we require; but from Messrs. Dadant's price list, which they have just forwarded to me, I find that the price for Dadant's thin foundation is *1s. 6d.*, per pound, about seven feet to the one pound, and Dadant's extra thin super foundation is *2s.* per pound, about eleven feet to the one pound, and at this price any quantity and any size may be purchased.

The best way to avoid composition foundation is to import direct, and if the Secretaries for County Associations could collect a number of orders, the various sizes desired could be obtained, and the cost of transit would be very little in addition per one pound. Messrs. Dadant guarantee every inch pure beeswax, and the same as the samples they supply.—T. Bonner Chambers, *Tref Eglwys, Caersws, Montgomeryshire.*

QUEEN-CAGE.

[1913.] I enclose you a drawing of my new queen-cage. If the idea carried out in the making of it—viz., that of the bees liberating the queen themselves at the usual forty-eight hours—will be instructive and interesting to any of the readers of your *Journal*, you are at liberty to make it known.



No. 1. Table of tin to rest on the top of frames.
No. 2. Hole in which to place queen.
No. 3. Slide to cover same.
No. 4. All tin.
No. 5. Wire of the ordinary stamp fastened under table No. 1 on one side and took under the bottom up to under the table on the other side.
No. 6. Tin shutters working stiffly on frame iron to keep candy from falling outward.
No. 7. A projecting piece of tin inside cage to keep candy from falling inside on queen.
No. 8. Open end.

I have been at some little trouble and some little expense over it: and as I am only a working man, and keep bees chiefly for what can be made out of them, I must confess that the cage has been before a well-known company for sale, and was after a long delay accepted by them at a little under the price asked for it; but as that was so long in coming to hand—viz., several months—I became impatient and wrote for its return; and as many things in your *Journal*, written by others who doubtless did not get their knowledge without labour and expense, have been very helpful to me in my bee-keeping experience, I in turn am anxious to help others. Let me say of my invention that the idea occurred to me a little over two years ago, after having rather blunderingly liberated a queen from a pipe-cover cage. Two or three angry bees were anxious to make acquaintance with her majesty before she was well out of cage, which said acquaintance was resented, and so took to herself wings and fled away. She was part of my riches, as she with her attendants had cost me eight shillings; and although she returned and was speedily at work, the failure or experience was not lost upon your humble servant, who thought the matter over with this result, viz., this queen-cage in its present state, for which I claim the following advantages:—

That going to the hive to liberate the queen is not required, which operation in the hands of a novice often excites the bees, which anger is thrown upon the queen, and, doubtless, often results in the loss of the same. Neither is there any danger of the queen taking wing or of injury in the liberating process.

Again, the two candy cakes put the bees in the best of tempers, which is all in favour of the queen's acceptance.

It can be made for about the same price as other well-known cages that are in the market, viz., about one shilling.

The candy cakes can be made in tin or wood frames the size of the cage end, which frames should be without top or bottom, simply ends and sides, so that the candy can be shoved out with your finger and thumb. If a frame was made with twelve compartments that would charge the cage six times. If any of your readers have a fancy to try this way of introducing their queens (next season, of course,) they can get any tinman with ordinary ability to make them the cage, the frames and candy they can make themselves; only let me warn them not to make the candy so hard that the poor bees cannot bite it. Or if any dealers in bee appliances, &c., care to make any use of this idea they are quite at liberty to do so to their heart's content, as it is not protected in any way whatever.—J. W. Blankley, *Denton, Grantham, Lincolnshire.*

MICROSCOPIC TESTS OF HONEY—ARE THEY INFALLIBLE?

[1914.] Your inquiry in reference to the reliability of the scientific tests for honey is very opportune. I made the past winter, in revising my book, a careful investigation of this whole subject, and I am led to doubt the existence of a sure test for honey, either chemical or by aid of the polariscope. As you doubtless know, there are two kinds of sugars—cane, and the glucose group, or reducing sugars. The latter are so called because they reduce the copper sulphate, when made strongly alkaline by the addition of caustic potash. Of the reducing sugars we have the glucose of our factories, honey, liver sugar, digested starch, or the sugar of digestion, &c. The chemist using the copper test as given above calls all these sugars identical, simply because they give the same reaction with the sulphate. I don't believe they are the same. If so why will bees forsake common commercial glucose for honey? or why will they die on the purest commercial glucose, and thrive on good honey? Cane sugar will not reduce the copper salt; and when eaten by animals it must be digested to be

absorbed and assimilated. Thus when we eat cane sugar we do what the bees do with nectar—we convert it into a reducing sugar, very likely the same as honey.

As will be seen by the above, nectar contains cane sugar. Indeed, the cane sugar in nectar often equals in amount all the other sugars put together. Analyses show, however, that the amount of this cane sugar in nectar varies. Let this be remembered: *The amount of the different sugars varies in the nectar of different flowers.* Again, as the bee sips nectar it is mixed with the secretion from the racemose glands of the head and thorax; and this acts like our own digestive secretions on the cane sugar, and changes it to reducing sugar. Now, suppose the bees are gathering very fast from the basswood, for instance, where a single colony may gather over 20 lbs. per day; does it stand to reason that they can digest this nectar as perfectly as though they were gathering from some source where they secured their stores in mere driblets? Thus in such cases of very rapid gathering the digestion would be less perfect, and the honey would contain much cane sugar. May this not account for the marked sweetness of basswood honey? In this connexion it is suggestive that, in the various analyses which have been made of honey, the amount of cane sugar varies. Thus I find the analyses generally give from one to three per cent of honey as cane sugar. Yet not infrequently the amount equals five or six per cent, while in some cases even twelve and sixteen per cent of honey has been found to be cane sugar. Here, then, mark the second uncertainty. Owing to the more or less rapid gathering, the digestion of nectar is more or less perfect. The chemist then would find much cane sugar, and would report adulteration, when the honey was entirely pure, right from the bees, and through them from the flowers; but owing to imperfect digestion, the cane sugar was very prominent. Such honey would be sweeter than though more reduced, or digested, and so might have higher intrinsic value.

We see, then, that the chemist cannot tell us absolutely whether honey is adulterated or not. There is reason to believe that absolutely pure honey has been pronounced as probably adulterated. The chemist was honest and able, but did not understand the whole question or its many difficulties.

But what of the polariscope test? This test depends on the property of various substances to deflect the rays of polarized light to the left or right. Thus, cane sugar changes the polarized ray to the right; so does dextrose, one of the reducing sugars of honey. On the other hand, lævulose, another of the elements or sugars of honey, bends the ray strongly to the left. Dextrose and lævulose are often called invert sugars; for when cane sugar is heated with a mineral acid like hydrochloric, it is changed to dextrose and lævulose. Dextrose and lævulose are obtained from fruits as well as from honey. Glucose is a term used to designate all the invert or reducing sugars, and is exactly synonymous with grape sugar.

Now, usually honey rotates the ray of light, owing to the lævulose, from two to twelve degrees to the left. FROM TWO TO TWELVE, are not these numbers very suggestive? In the first case, two degrees; there was likely much dextrose, possibly aided by not a little cane sugar or sucrose; while in the latter case the lævulose was in the ascendancy. Now suppose the ray bends wholly over to the right. 'Hey ho!' says the scientist—'adulteration!' when, in fact, it was pure honey; but the cane sugar and dextrose were still more pronounced. Surely, if the ray often varies from two to twelve, left-handed rotation, we may certainly believe it will often show a right-handed deflection. I fully believe that we have as yet no reliable methods to detect adulterations.

I am very certain that adulteration is never practised by bee-keepers, and is very rarely practised, if at all in these days, by dealers. This opinion is not a mere guess, but the result of extended inquiry.

To conclude, Mr. Editor, I have already commenced just such a series of experiments as you suggested in last *Gleanings*. By aid of our chemical department we shall soon know the exact truth of the matter. We shall not only test the present methods of analysis thoroughly, but shall strive to find if there is a method which is sure and practical to tell pure honey from that which is adulterated. A. J. COOK, *Agricultural College, Mich.* (*Gleanings in Bee Culture*).

WINTERING BEES. (1867.)

[1915.] The article by your Gottenberg correspondent is most interesting, but I hope he will be good enough to tell us whether he winters his bees under enamelled cloth, or with upward ventilation?

Probably the bees at the North Cape live in holes in the rocks, substituting a foot or two of rock for an inch or two of chaff-packing. But could not the numerous persons who annually visit the North Cape in the *Ceylon* be induced to investigate this point?

With respect to wintering generally, when discussing the necessity for winter passages, &c., I think some regard should be paid to the different races of bees and the description of hive used. For instance, winter passages may be very necessary in single-walled hives, but can they be required in double-walled hives packed with cork-dust where the bees are crowded under enamelled cloth?

Cheshire says that bees will cluster against a hive-side when packed with cork-dust, and a peep into my hives last month fully confirmed this statement.

Another point to which I should like to allude is the advice in the books to extract all unsealed honey or syrup when packing for the winter. I have not met with a bee-keeper who is in the habit of doing it, and surely it may be omitted (except in extreme cases), as it would excite the bees most objectionably and would involve great labour if the hives are numerous. Will your readers inform me if it is a common practice amongst leading bee-keepers in dealing with *English bees?*

Perhaps your Gottenberg correspondent would kindly tell us what course he adopts with regard to winter passages and extracting unsealed honey?—T. F. L., *Brondesbury.*

BEES AS EDUCATORS.

[1916.] No sooner does a person become the owner of a colony of bees than he looks around to see what are the prospects of future gain. Heretofore he drove or rode along the highways, noticing the ruts, bridges, fences, and houses, but now his vision takes in a wider range. His observation is quickened, and trees, shrubs, and plants, have put on new life, as it were, to his enlivened faculties. From the first opening buds in Spring until the last rustling leaf has fallen, his interest never lags, as he constantly watches the opening flowers, and notes with pleasure the busy workers roaming over them in quest of treasure to store in their hives.

What was to him once a useless weed, to be cut down with the scythe, or whacked off with the hoe, is clothed in beauty and becomes a priceless treasure. Whoever saw any beauty in the figwort, or watched for the appearance of its tiny cupboard, looked down into their depths for the first appearance of sparkling nectar, but a bee-keeper? Or whoever saw any utility in Spanish needles, or beggar-ticks? There is a bond of friendship existing between the bee-keeper and nectar-bearing plants, and they appear to spring up to greet him wherever he goes. The Indian calls white clover 'The White Man's Foot,' and well he may, for its modest flower soon appears as the harbinger of peace and plenty.

Soils.—The interest thus awakened in plants soon takes on a wider range and extends to the soil. Seeds of sweet clover (melilot) are scattered on gravelly soil, take root, penetrating deeply, keep it from washing and dying and add to its fertility. Dreary wastes thus become clothed with verdure, adding to the beauty of the landscape and yielding choice nectar, fit food for gods. On a recent trip of a dozen miles on a railroad leading out from this city, we were agreeably surprised to find this plant growing luxuriantly nearly the whole distance, and some deep cuts were so covered with it that the soil could not be seen. It is to be hoped that the officers of the railroads will appreciate the utility of this plant in keeping the soil from washing away and preventing damage and danger thereby, and foster its growth. I have seen the yellow variety of this plant growing on the borders of salt marshes on the shores of Long Island Sound.

Marshes and wet lands along rivers and water-courses, come in for a share of attention by the bee-keeper. His eye quickly detects anything in the interest of his winged stock. If by digging a ditch and running off water the growth of favourite bee-plants is promoted, it is done. He then benefits his neighbours as well as himself, for, as the ground becomes dry, blue grass and the clovers will take root, thus promoting grazing for stock, and malaria will disappear. New plants will spring up as if by magic, the button bush (Cephalanthus occidentalis) growing in water. It seems as if the seed of honey plants rattled from the bee-keepers' clothes. The seed of many honey plants is food for birds, which are our friends and co-workers in destroying many noxious insects.—(Mrs.) L. Harrison, *Peoria, Ills.* (*Prairie Farmer.*)

LATE QUEENS.

ARE YOUNG QUEENS THAT REFUSE TO LAY LATE IN THE FALL NECESSARILY UNFERTILE?

[1917.] I have just had my attention called to a matter which interests me from a scientific point of view. One of the most prominent queen-breeders in the Northern States writes me that his queens which have come forth from the queen-cells on and after September 15th are none of them laying, although he has practised feeding them. Drones are abundant, and have been flying freely every two or three days, and often for several consecutive days together. Some of the queens have flown out that were more than ten days old. He adds, further, that some imported queens which have just arrived he has failed to make lay, even though he has fed the colonies.

This breeder is of the opinion that these queens are impregnated, and will lay all right if kept till another spring. One of the queens was sent me for microscopic examination, that I might confirm or disprove the breeder's opinion by a discovery of the facts.

The queen looked like a non-laying impregnated queen. I examined the contents of her spermatheca, and found that she had been impregnated. The contents swarmed with the thread-like sperm-cells (spermatozoa), which positively attest that she had successfully mated (see last edition of *Bee-Keepers' Guide*, p. 102, where the sperm-cells are illustrated and the process of fecundation fully described). Now, it seems well established that, while laying, the queen is fed with chyle, or digested food, by the workers. Is it not probable that, in this case, the workers, realising that the time for egg-laying for this season is past, refuse to yield of their digested aliment, and so the queen, of course, cannot lay? I believe the explanation lies just in this fact. The workers refuse to feed the queen with the proper food, and her eggs are, as a consequence, not developed. Of course it is just possible that living so long—months—before egg-laying, she may never be a very fertile queen, possibly be wholly sterile; but I should not expect this. It is a frequently observed fact that when a queen once stops laying in the fall, at the close of the honey-harvest, feeding ofttimes wholly fails to start egg-laying again. It seems to me quite probable that the cause is the same as before. The worker-bees refuse to furnish food of the requisite quality.

Have not some of our extensive queen-breeders, like Hutchinson, Alley, Root, &c., observed on this matter of queens before? If so, have they found such queens any less valuable the next year? I hope our friend who has just sent me the queen for dissection will keep all the other queens, note results carefully next spring, and inform us of the facts. I think the matter an interesting one, and very possibly it has practical significance as well.—A. J. Cook, *Agricultural College, Michigan.* (*American B. Journal.*)

INTRODUCING VIRGIN QUEENS.

[1918.] It is the exception to the rule that any colony or nucleus that has been queenless seventy-two hours or more will readily accept a young queen just hatched from a cell. With such introduction of young queens almost every bee-keeper is familiar. After a queen becomes twelve hours or more old, the conditions for her safe introduction are changed, and it becomes an exception to the rule if she is not killed if introduced by any plan of direct introduction. Special conditions must be created, the most essential of which is absolute queenlessness of the colony or nucleus to which it is desired to introduce such a queen. By this is meant the taking away of the queen and all unsealed brood. These measures, whatever else is done, are imperative to success. And further it is also required, as a rule, and particularly with each of the yellow races of bees, that the colony or nucleus has had a laying queen for at least twenty-one days, or until her young bees begin to hatch out.

If the attempt is made before this to introduce an old virgin queen, and especially if to a nucleus that has several times been deprived of its queen before her brood hatches, there will be found no trouble to introduce the queen, but she will not be allowed to fly out and mate, but will be balled to death on her first attempt to leave the hive. This, however, is a common occurrence where queens just hatched are run into such nuclei, and often occurs in full colonies. The trouble in all such cases is from laying workers.

There are also certain details of procedure required to insure uniform success, but the following may be depended upon:—We will take, for example, a virgin queen received by mail, that may be from one to ten days old; she is placed where she is safe for twenty-four hours, but not near the hive selected to introduce her. First, remove the reigning queen. The next day, towards evening, prepare a hive or nucleus with one comb of honey, and fill out with frames of empty comb or combs of all sealed brood, or with frames of foundation. Cage the virgin queen alone in a cage having a little 'Good' candy, and insert next to the comb of honey or brood. Now shake all the bees into this prepared hive, or upon a sheet in front of the hive, and give the combs from which the bees are shaken to another colony. The bees will be greatly excited over the loss of their brood, but will get quiet during the night. In forty-eight hours the queen may be liberated in the evening, and is certain to be well received, and to mate in a few days. After she has mated and is laying, the brood taken away may be returned, or that from other colonies given, as desired.

In giving all sealed brood to the prepared colony, great care is required to exclude any unsealed brood, for, should there be only one worker egg left, failure is almost certain, as the bees will choose it rather than the

mature queen. When I use sealed brood for the purpose, it is always taken from a colony that has been queenless not less than nine days, and all cells removed.

Virgin queens may also be introduced to any full colony that has been queenless nine days after first cutting out all cells; but the young queen, if more than twelve hours old, must be caged from twenty-four to forty-eight hours. They may be introduced to nuclei in the same manner, but are liable to be balled when they attempt to fly out to mate. Probably one half to two thirds of the queens so introduced will be allowed to mate, the risk diminishing with the strength of the nucleus.

The writer has tried almost every experiment to introduce old virgin queens, but with poor success, except by the methods here given. The first is well-nigh infallible, as it is also in the introduction of laying queens.—Dr. G. L. Tinker, *New Philadelphia, O.* (*American Apiculturist*).

A FEW THOUGHTS FOR CHILDREN ABOUT YOUNG BEES.

[1919.] There is a good deal more in a colony of bees than the honey and wax they produce. They are models of industry, neatness, and order. About the first lines engraved on the plastic clay of my memory, are those of Watts:—

'How doth the little busy bee
Improve each shining hour,
And gather honey all the day,
From every opening flower.

'How skilfully she builds her cell,
How neat she spreads the wax,
And labours hard to store it well
With the sweet food she makes.'

Children should be taught to watch the bees as they go in and out of their hives, and, particularly, notice that each individual bee has a duty to perform for which it is accountable. The guards protect the entrance against all intruders, and no enemy is allowed to pass without resistance. It is amusing to watch a bumble-bee as it tries to evade the guards and gain access to the rich stores within. How soon his back is mounted, and 'policemen' at his side bring him forth, as he loudly buzzes and struggles for freedom. Bees from neighbouring hives are not allowed to enter without showing their passport, which is a well-filled sac of nectar, while all paupers are denied entrance. Woe betide the moth that has the presumption to knock at the door of a strong colony of Italians, for it will never try that game again.

When the young drone-bee emerges from the cell, he looks around for something good to eat. If he is not fed by the field-workers, he goes to a cell and helps himself. This he is allowed to do *ad libitum*, until his duties commence, which in his case is to fertilise a queen. He daily sallies forth in quest of her, to perform the task for which was the purpose of his creation, and in the performance yields up his life. If he is not needed for this duty, he must 'walk the plank,' for no needless members are allowed, but all must succumb to the good of the commonwealth.

The young worker is allowed a few days to eat and digest food, when her duties as nurse to the larvæ and queen commence.

The duties of the queen are so onerous, in the production of so many eggs, that her system is not capable of sustaining the draught unless her food is given her in a half-digested state, so that it readily assimilates. The queen, even, is not allowed in the hive if she does not perform her duties properly. She must not 'skip any stitches,' but go round and round in a circle, using every cell; and her progeny must be able to perform their duties, or she is ejected. Woe betide her if she rears all 'boys' and no 'girls,' and her owner finds it out.

When the worker's duties of a nurse are completed, she takes a rest in secreting wax and building comb, and is allowed a play-spell after dinner, that she may learn the location of her hive. Perhaps she is given a lesson now and then in stinging, as she is always an adept at it, and ready, on the least provocation, to 'curl her tail.' We see more of her in her capacity as guard and field-worker than in any other.

She attends strictly to business, and, when gathering clover-honey, does not stop to smell the fragrance of roses, pinks, and posies, but goes quickly from one clover blossom to another. There is harmony in Nature, and she must carry the fertilising powder from flower to flower, so that the seed will germinate and the plant be perpetuated.—(Mrs.) L. Harrison, *Peoria, Ills.* (*The Prairie Farmer.*)

Podington, Bedfordshire.—A lecture on 'Bees and Bee-keeping by the improved method of the Bar-frame System,' was given by the Rev. E. Eade, rector of Farndish, in the schoolroom on Thursday evening, 29th ult., by the kind invitation of the Vicar, the Rev. Seneca W. Winter. The lecture was illustrated by the excellent lantern transparencies of Mr. Watkins of Hereford, which gained the bronze medal at the Royal Show at Nottingham this year. These transparencies show the practical work in connexion with the new system, such as *driving* the bees instead of killing them to take their stores, examining the brood, taking of sections, &c. The transparencies include also enlargements of *parts* of the bee, such as the tongue, the sting, the hind leg, with its pollen basket, and wax pincers, and the first leg, with its hairs, comb, and eye-brush, &c. After describing these parts, and showing the wonderful arrangements of the bee for fulfilling the purposes for which it was made, and after showing that the value of the bee consists, not only in its gathering nectar to convert into honey and making wax, but also in fertilising the flowers and causing an increase in fruits and seeds, the lecturer strongly advocated the improved method of bee-keeping as being more humane and profitable than the old straw-kep system. The lecturer exhibited also specimens of the improved appliances, such as a bar-frame hive complete, section boxes, and extractor, &c. The lecture was highly appreciated throughout, and a hearty vote of thanks was accorded for a most interesting and instructive evening's entertainment.

A Slight Improvement.—Over a public-house door once hung a signboard, on which was painted a bee-hive, and the following lines underneath:—

'Within this hive we are all alive,
Good liquor makes us funny;
If you are dry, step in and try
The virtue of our honey.'

A wag passing that road, however, thought he could improve the truthfulness of the inscription, so he altered it as follows:—

'Within this hive we are dead and alive,
Bad liquor makes us funny;
If you are dry, step in, and we'll try
To diddle you out of your money!'

Echoes from the Hives.

Depton, Lincolnshire, Dec. 7th.—Weather far surpassing that of July. Last night the glass did not go below 45°, whilst several times here in July it went down to 35°. To-day has been like an April day, birds singing most sweetly; roses, jasmine, stocks, polyanthus, Christmas rose in bloom, and snowdrops look like blooming by Christmas if this continues; the fruit-buds plumping up and getting dangerously forward. Queen-wasps fly freely, of which there seems, notwith-

standing the wet season, a goodly number, several have been destroyed. Bees have had some grand flights more or less this last month, which activity, although productive of health, also means a greater strain on winter stores, which some of us will do well to remember, and have some good candy ready at hand.—J. W. B.

North Leicestershire, December 8th.—Bees were in full flight on seven occasions in November, and on the 2nd, 4th, 5th, and 6th inst. Temperature has been high, several times above 50°, and on the 5th it reached 54°. On that day the bees were on the wing from 8 a.m. to 3 p.m., some few carrying in light pellets of pollen. Daisies by the hundred bespangle the pastures, and the following plants are showing plenty of bloom: Buttercups, violets, hepatica, primrose, gillyflower, stock, arabis, red and white dead-nettle, and various sprouting 'greens.'—E. B.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Letters or queries asking for addresses of manufacturers or correspondents, or where appliances can be purchased, or replies giving such information, can only be inserted as advertisements. The space devoted to letters, queries, and replies, is meant for the general good of bee-keepers, and not for advertisements. We wish our Correspondents to bear in mind that, as it is necessary for us to go to press in advance of the date of issue, queries cannot always be replied to in the issue immediately following the receipt of their communication.

All queries forwarded will be attended to, and those only of personal interest will be answered in this column.

R. Baldwin.—1. *Hives in Cellars.*—Put the hives out as soon as pollen can be freely obtained—in your locality, probably April. 2. Either use no floor, or, otherwise, block up the hive one or two inches from same.

A. Patterson.—*Recipe for making Candy.*—Into a tin saucepan put about three-quarters of a pint of water, let this boil, and gradually stir in 6 lbs. of white lump sugar. Keep it boiling, and stir to prevent burning. To test when it is done, dip your finger into cold water, then into the boiling sugar, and back again into the water; if properly done, it will be crisp and brittle: or drop a little on a plate, and if it sets tolerably hard in cooling, it is done enough. If very sticky and soft, it must be boiled a little longer. When hard, take off the fire, and stir till it begins to set; place paper into saucers, and pour the candy out into them. In half-an-hour it will be hard and ready for use. Great caution is requisite to prevent it from being burnt, as burnt sugar is injurious when it is fed in cold weather.

Sunny Side.—1. *Fumigating.*—We see no way except emptying the hives first. 2. *Winter Supplies.*—We should give a half more than you name. 3. *Evaporation.*—We have no data to help you. 4. *Syrup.*—About 1½ cwt.

J. W. B.—*Contagion of Foul-brood.* Decidedly, if proper precautions are not taken.

Business Directory.

HIVES AND OTHER APPLIANCES.

Abbott Bros., Southall, and Merchants' Quay, Dublin
Appleton, H. M., 256A Hotwell Road, Bristol.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Burtt, E. J., Stroud Road, Gloucester.
Edey & Son, St. Neots.
Godman, A., St. Albans.
Howard, J. H., Holme, Peterborough.
Hutchings, A. F., St. Mary Cray, Kent.
Meadham, M., Huntington, Hereford.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn
Stothard, G., Welwyn, Herts.
Walton, E. C., 82 Emmanuel Street, Preston.
Webster, W. B., Binfield, Berks.
Woodley & Flood, 26 Donnington Road, Reading.
Wren & Son, 139 High Street, Lowestoft.

HONEY MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
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Edey & Sons, St. Neots.
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Neighbour & Sons, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baldwin, S. J., Bromley, Kent.
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METAL ENDS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
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Godman, A., St. Albans.
Meadows, W. P., Syston, Leicester.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.

COMB FOUNDATION.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Baldwin, S. J., Bromley, Kent.
Blow, T. B., Welwyn, Herts.
Edey & Sons, St. Neots.
Howard, J. H., Holme, Peterborough.
Neighbour & Sons, 149 Regent St. & 127 High Holborn.
Stothard, G., Welwyn, Herts.

COMB FOUNDATION MILLS.

Godman, A., St. Albans.

HONEY GLASS MERCHANTS.

Abbott Bros., Southall, and Merchants' Quay, Dublin.
Blow, T. B., Welwyn, Herts.
Pearson, F., Stockton Heath, Warrington.

THE

British Bee-keepers' Association

Established 1874.

President: THE BARONESS BURDETT-COUTTS.

THE Committee appeal to Bee-keepers, Manufacturers of Bee-keeping Appliances, and others desirous of promoting our Home Industries, to become Annual Subscribers or Donors to any Special Branch of the Association's work.

Subscriptions, 5*s.* and upwards per annum.
Life Members, £5.

The Association carries out its work by—

The holding of Annual Exhibitions;
Assisting County Associations;
Sending out Lecturers and Experts;
The publication of Literature relating to the best methods of Bee-culture;
The disposal of Bee-produce, &c., &c., &c.

Secretary: John Huckle, Kings Langley, Herts.

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THE
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Editorial, Notices, &c.

HONEY IMPORTS AND EXPORTS.

Recently a correspondent made an inquiry as to the places from which honey was imported into this country and the uses which were made of the honey so imported. We promised to reply to this inquiry as soon as we were in possession of the Annual Statement of the Trade of the United Kingdom with Foreign Countries and British Possessions for the year 1887.' This Statement, which is now before us, is compiled in the Custom House from the documents collected by that Department, and presented to both Houses of Parliament. We may therefore place full reliance on the figures therein contained.

The following tabular statement specifies the countries from which honey was imported in 1887, with the amount and value thereof:—

	cwt.	£
From France	1,262	2,783
„ United States of America	3,562	5,343
„ Spanish West India Islands	4,379	3,628
„ Chile	3,189	2,808
„ Other Foreign Countries	509	648
Total from Foreign Countries	12,901	15,210
From Australasia	129	249
„ British West India Islands	556	562
„ Other British Possessions	3	4
	688	815
Total	13,589	16,025

From the above we deduce that the mean value of the honey imported was 1*l.* 3*s.* 7*d.* per hundredweight. There is a considerable noticeable difference in the value of the respective honeys: that from France obtains the highest price, viz., 2*l.* 4*s.* 0*d.* per hundredweight; that from Australasia 1*l.* 18*s.* 8*d.*, and that from the United States 1*l.* 10*s.*; while the mean of those from the Spanish West India Islands, Chile, and the British West India Islands, is about 17*s.* 3*d.*; and we presume we are justified from the price in arriving at a valuation of the quality of the honey.

But a considerable amount of the honey imported is, again, exported to other countries. The following are the amounts re-exported:—

	cwt.	£
To Germany	3,606	3,782
„ Holland	4,274	3,540
„ Other Foreign Countries	3,087	2,892
Total to Foreign Countries	10,967	10,220
To British Possessions	145	275
Total	11,112	10,495

The mean price of the above is about 18*s.* 10*d.* per hundredweight. The difference between the amount of that imported and that exported is 2477 cwt., and the value 5530*l.*

In comparing the above figures with those of the previous year, we note a great difference in the amount of honey imported, and consequently in that exported. In 1886 the total amount imported was 21,553 cwt., and the value was 25,610*l.* The amount re-exported was 19,798 cwt., and the value 17,568*l.*

If we deduct the exports from the imports, we arrive at the amount retained for home consumption; the result does not appear to be very large, it being only 2477 cwt., and this gives us the amount of honey which, in 1887, our bee-keepers were not equal to supply for the home demand. The amount of difference had, however, in 1887 increased, as in 1886 it was only 1755 cwt.

The inquiry of our correspondent extended also to the modes in which foreign honey was utilised in this country. And we derived considerable information on this point from a letter we received at the beginning of this year from an intelligent correspondent whose father was engaged in the importation of honey, more especially from Chile, which country has for many years contributed very largely to the amount of the imports of honey. We cannot do better than here reproduce the information which our correspondent received from his father:—

'The Chilian honey, of which I formerly got consignments, was mostly sold in Liverpool through a broker. The few parcels that came to London were given to my drug-brokers, who took samples and submitted them to the wholesale confectioners. The latter relied upon their being given impartially by the brokers, and made offers which were submitted to me. I afterwards received a contract of sale.

'Or the brokers advertised the honey for sale by public auction, when they exhibited samples at their offices for intending buyers to examine. Chilian, Californian, and Cuban honey comes generally to Liverpool, has every appearance of rough handling, and of wanting a great deal of civilisation yet. It is not likely that any methods exist in those countries by which you could learn anything. These outlandish honeys are at present (after the season) unsaleable, and only worth 25*s.* per cwt., whereas British honeys might still be sold at 60*s.* The principal season is two months before Christmas, and the principal buyers are the wholesale confectioners and cake-manufacturers. They absorb the whole import, the difference in price between British and Chilian being so great. The rough quality of the latter is quite sufficient for the common cakes. These articles are generally sold for cash in fourteen days, and usually through a broker, who acts an an impartial middle man.'

The statistics of the imports of honey for the present year are not yet completed, and therefore we are not in a position to institute a comparison between them and those of the previous year. In the meantime we gladly avail ourselves of this opportunity to express our sense of the courtesy of those of the Statistical Department of the Custom House who have forwarded to us with such regularity the monthly imports of honey into the United Kingdom,—a courtesy for which, we believe, we are in a great measure indebted to the kind offices of E. Bellairs, Esq., Hon. Sec. of the Hants and Isle of Wight B.K.A.

We must postpone to the following week the consideration of the imports and exports of wax during the year 1887.

WITH THE AMERICAN BEE-KEEPERS.

By Thomas B. Blow, Welwyn, Herts.

(*Continued from p.* 600.)

Watertown, Wisconsin, U.S.A., Nov. 1.

My journey east was to terminate here at Watertown, Wis., which is quite near, only sixty miles across the Lake Michigan, from Grand Haven to Milwaukee. However, owing to the trains going wrong (an event which frequently occurs over here) I missed the boat, and had to go round by Chicago, between 200 and 300 miles. However, the trains are furnished with most luxurious sleeping cars, and one gets through a long journey without much fatigue.

My business here was with G. B. Lewis & Co., and I was made heartily welcome by Mr. C. E. Parkes (a member of the firm), who had been in England visiting me during the past summer. Here I may say are the headquarters of the section-making industry, and a few words about the history of the one-piece section may not be out of place. G. B. Lewis & Co. contend that the section's practical form was perfected in their workshops here. The idea of a box formed by the V-shaped grooves as corners was not new, but its application to a section box for honey, with the bee openings and groove for foundation was a distinct advance in bee-culture. But most inventors have their troubles with infringements—we have in England. They applied for a patent on the machinery for making these section-boxes, but meanwhile one of the employés of the firm, and whilst still in their employ, applied for a patent on the section itself. Of course, he did not remain long in their employ after this was discovered, as they considered he had appropriated the ideas they had been working out. The lawsuit that followed with regard to the one-piece section is now a matter of history with American bee-keepers. Lewis & Co. did not wish to be involved in litigation, more especially as they thought their late employé had got some one with very considerable means to back him, but they made an offer to Mr. A. I. Root that they should jointly go on making the one-piece section and jointly defend any action that might be brought. Mr. Root declined this offer, as he did not think that Mr. Farncrook would bring any action, as he, Mr. Root, was convinced that the whole was unpatentable, and therefore common property. Lewis & Co. therefore devised the two-piece section which was so much in use a few years ago, and which was a marvel of perfection, both as regards material and workmanship. An action was duly brought against Mr. Root by Mr. Farncrook, and the case was tried at great length, and came finally before the Supreme Court, where it was decided that the one-piece section was unpatentable. In Mr. Root was found a man who when convinced that he was right would carry anything through, and in the matter the thanks of bee-keepers generally are due to him.

Lewis & Co. immediately on this decision being known at once went to work to put down such a perfect plant of machinery that they could command the trade of the world in the one-piece section, and it is not too much to say that they have made very fair progress in this direction. Their works, timber yard, and warehouse, cover about four and a half acres, and they have what is known as the first right to the immense water power of the Rock river which flows by. There are two turbine wheels which, with high water, develop between 150 and 200 horse power. The factory is a wooden building about 90 × 100 feet, having a basement, a ground-floor, and an upper floor. A main shaft having on it about thirty pulleys of various sizes gives motion to the many machines—their largest planer weighing between three and four tons. The ground-floor is devoted to branches not connected with bee appliances. To be able to secure absolutely white basswood in large enough quantities for their output of sections it is necessary to use a vast quantity of that wood, as not more than twenty per cent is good enough for the finest sections which are their speciality; they therefore make large lots of boxes for use in various trades, match-boarding for ceilings and walls, flooring also. For these purposes the brown basswood is equally good as the white. On this floor twenty to thirty men are constantly employed, and the noise of the various machines is one ceaseless whirl. Among these men are kept two skilled engineers whose sole duty is to keep the machinery and tools in fine order. There are emery wheels and grinders for the knives and saws, and one filer is constantly kept on the go sharpening.

The upper floor is the sanctum sanctorum, and to this I believe that I am the first outsider having an interest in this trade who has been admitted. Many have been the dodges and devices resorted to by emissaries of rival firms to get a view of the section-making machinery, which is all on this floor. When Lewis & Co. found they could not patent their machinery for section-making they determined that whatever attractions and improvements they made should be kept strictly secret; and I may at once say as one who is a practical section-maker that their methods of production differ entirely and radically from any of the ordinary methods in use. When Mr. Parkes told me that they did not produce their sections from two-inch planks I was a bit surprised, but when he said they were all made from strips of wood two inches wide by one-eighth thick and from ten to sixteen feet long, then I was amazed to know how they could be produced at any reasonable price.

Here is the solution:—Every part has its own machine; each little thing is done separately, so that the present

perfect article is almost entirely produced by unskilled labour, owing to the great subdivision of this labour, each workman having only some simple process to do which he can easily master. Out of wood seven-eighths of an inch thick, five strips, each planed on both sides, are produced, and the saws that do this work are marvels, both in thinness and arrangement of teeth. Of this latter point I have never seen anything like it before; it entirely obviates the objectionable fringe that is often left on one edge of the wood by most circular saws. The grooving machines for the dovetails, at each end, and the cutters for the bee-ways are marvels of simplicity too; all waste short pieces are at once taken and used up for the four-piece sections. The V-cutting machines which, it is well known to all practical men, are most delicate and exact, are here so simple that a boy throws the strips into a hopper on one side and they are taken through automatically and come out perfect on the other; and the arrangements for counting and packing are so simple and ingenious that I would like to describe them, but am told I must not, as then any one else would be able to do it and wonder they never thought of it before. So perfect is everything that only about eleven hands are required to turn out 50,000 sections daily. The power being water they do not need to use up the shavings and saw-dust as fuel, and these are sold for horse litter in place of straw; all the odd wood too, is sold for fuel in the town, and a horse, cart, and man are constantly on the go disposing of these waste products.

The capacity of the factory is 15,000,000 sections per year, working ordinary full time. In the busy time overtime is resorted to, but as the factory is run full time all the winter, it can, as a rule, keep enough stock made to meet all demands.

The timber yards are between the factory and warehouse. This is a large brick building capable of holding about 10,000,000 sections; and, as a rule, there are also here between 5000 and 10,000 bee-hives of various sorts, in the flat ready for immediate shipment. It is in contemplation to build a foundation factory, as the sale amounts to several tons yearly, and at present it is all bought ready made.

Mr. Parkes was going on his annual trip to buy basswood lumber, and kindly invited me to accompany him. This wood has to be contracted for in advance when required in large quantities, and he therefore has to go round to the various saw-mills, many of them in the Backwoods. I therefore got a good idea of the quantity of timber that they annually use. The principal point in the lumber district is a city called Warsaw, and beyond that are little villages and mills just on the borders of civilisation. At Warsaw are very fine lumber mills, and they are worked principally by the water power of the Wisconsin river which is very large. The speed at which these mills work is very surprising; the saw going through logs, three to four feet in diameter, like a flash of light. In buying bass-wood for section-making two conditions have to be observed. 1. The log must not have been in the water, as a rule the logs are floated down to the mills; if it has been in the water the colour is spoiled, and the smell, which when sawn is like honey, is lost and an objectionable smell takes its place. 2. It must be sawn in the winter when the frost is in the log, as this brings about the chalky whiteness which is so desirable in sections. In certain mills where these conditions are observed, Lewis & Co. take the entire cut of basswood; and the first contract I saw made was for 1,000,000 feet more or less, that is surface feet one inch thick. The next contract was in the same town and was for between two and 3,000,000. Then we went on to various small mills where the total output of basswood would in each mill amount to four or five car-loads; when sawn it is carefully stacked in large piles to season, and is, when dry, sent on by rail re-stacked in their own yard and used as required.

When we were so near the hunting grounds, we could not resist the temptation to go deer and bear hunting, and having borrowed Winchester rifles and got a real old hunter for guide, we went to the woods, and, though rough, it was most enjoyable; game is 'plenty' to shoot, hard fare, and sleeping in timber huts on benches strewed with pine and hemlock branches, and our blankets to sleep in. At night we would sit round our fire and smoke and hear the marvellous tales of the old hunter, our guide. We passed several Indian encampments, and altogether had a very fine turn, but were not a bit sorry to get back to civilisation, as though the fare agreed with me and the old hunter, my companion got along very poorly with it.

I am starting from here next week, and hope to call on Dr. Miller, Messrs. Newman, A. I. Root, W. T. Falconer, and then on to Canada, where I hope to see Mr. D. A. Jones and others; and if anything of interest transpires I will write you an account of it.—THOMAS B. BLOW, *Watertown, Wisconsin, U. S. A.*

(To be continued.)

USEFUL HINTS.

WEATHER.—On the nights of the 12th and 13th inst. our thermometer registered 7° of frost—sufficient to check the flights of bees, and to remind them that they had to deal with December and not with June—a necessary hint, and greatly to their advantage as regards the consumption of stores. Our daily papers of the 5th and 6th inst. have reported as follows:—'High temperature still prevails over the whole of the British Isles. Over a third of the country the thermometer did not fall below 50 during Tuesday night, the lowest reading being 38° in the Hebrides. Yesterday morning a few stations in the far north reported temperatures between 46° and 49°, but from all other parts they ranged from 50° to 54.° . . . . Just now we have every day before us the spectacle of the union of May and December, and for once we have the advantage over the so-called "sunny" parts of Europe. On Tuesday morning (Dec. 4th), for example, London was 5° warmer than Naples, 7° warmer than Monaco, 9° warmer than Laghouat, in Central Algeria, 11° warmer than Constantinople, 12° warmer than Bordeaux, 14° warmer than Marseilles, 16° warmer than Rome, 17° warmer than Madrid, and 19° warmer than Paris, where snow was falling. On the following day London was 30° warmer than Belfast, while the temperature of the other places mentioned above continued about the same. If this kind of thing continues, people will be coming from the bleak and frosty Riviera to winter in the genial climate of London, and to inhale the balmy, flower-perfumed air of Sydenham and Richmond!' Truly our climate, for width of range of temperature and variableness, maintains its superiority over all others.

HONEY ADULTERATION.—We quote the following from the *St. James's Gazette* of Dec. 6th:—

'So extensive has the adulteration of honey with glucose become in America, that efforts are being made to obtain Federal legislation, after the pattern of the oleomargarine law, to prevent it, by levying a prohibitory tax on spurious honey. No doubt the demand for American honey in foreign countries has been greatly diminished by the sophisticated character of the stuff exported in recent years, which is more like refined molasses than the delicate produce of the bee.'

We congratulate our Transatlantic brethren on this step in advance, and sincerely hope that success may attend their efforts.

ROOFS AND COVERS should be removed from the hives on bright warm days, and replaced towards evening. This allows a free circulation of air around the hives,

conducing to dryness and riddance of insects, such as spiders, earwigs, &c.

Dysentery generally follows long confinement to the hives, with little or no chance of flight in the open air. It is often caused also by improper food, such as unsealed, unripened, acidulated honey or syrup, and by too much upward ventilation. Where careful winter preparation was made in due season, and a sufficient supply of wholesome food supplied, there need be little fear of dysentery. A flower-pot, filled with hay, and inverted on a piece of woollen cloth, over the feed-hole of skeps, will absorb any moisture arising from below, and keep the interior of the hive dry and wholesome. Mr. Simmins tells us, in his book entitled *A Modern Bee Farm*, p. 85, that, 'Dysentery and other ills are brought on by the two common neglect of providing a sufficient space below the frames. Where a lower rim cannot be added to the hive, a circular hole of about 2 in. in diameter should be cut in the floor-board, which will greatly assist ventilation, while providing a ready means for disposing refuse and dead bees. Failing these precautions, dead bees drop to the floor, and clog the too shallow space under the frames; then, getting into a mass, ventilation is impeded, and when a fine day occurs, the bees have enough to do to find the entrance, while the dead and rubbish remain untouched, only to be added to during the next cold spell. Insufficient ventilation and foul matter now begin to tell upon the constitution of the population, and there is little chance that the stock will ever be of much use unless it has immediate attention, as many of the bees are unable to fly when warm days offer them a chance; particularly is this the case where the frames run across the entrance with double walls.'

Quilts.—As regards which he further warns: 'If you use porous material above the winter cluster, an entrance of not more than 3 in. in width should be allowed; if a non-porous covering, such as American oil-cloth, be used next above the frames (of course with warm material over that), then a wider entrance must be provided according to the strength of the colony.'

Position of Frames.—We are told that, 'All hives should stand so that the frames are "end on" to the south wall, that every seam of bees is warmed up during a gleam of winter sunshine, enabling them to change their position and take food, while bringing stores nearer to the cluster.' This view of course supposes the hive to have a south aspect, *i.e.* that the entrance faces towards the south, a system we always adopt. We also prefer a space of 2 in. at least beneath the frames, and our quilts are the non-porous American oil-cloth next the frames, with plenty of warm material upon it, the entrances being kept at the summer width of 6 in., or, in some cases, the width of the hive. Thus prepared, hitherto our bees have wintered remarkably well, and we rarely have a case of dysentery, a damp hive, or mouldy combs.

On Ventilation.—Mr. Cheshire also tells us:—'I strongly advocated, in former years, that ventilation should be allowed through the top cover; further developments have made it doubtful whether this is so necessary as was supposed. If a sufficient opening (of five inches or six inches at least) be allowed at the entrance (in addition, a ring of wood two inches deep between the hive and its floor-board lifting the frames, is a valuable assistance), top ventilation may be omitted and American cloth may be placed over the bees.'

Old Writers.—The views of many of our old writers on bees and bee-keeping are both amusing and instructive, hence we make no apology for introducing a few excerpts. Buffon, in his *Histoire Naturelle*, published rather more than a century ago, describing the honey-bee, says: 'The animal is furnished with teeth, which serve it in making wax, which is also gathered from flowers, like honey. In the thighs of the hind legs there are two cavities; and into these, as into a basket, the animal sticks its pellets. Thus employed the bee flies from flower to flower, increasing its store and adding to its stock of wax, until the ball upon each thigh becomes as big as a grain of pepper; by this time, having got a sufficient load, it returns, making the best of its way to the hive. When the bees begin to work in their hives, they divide themselves into four companies; one of which roves the fields in search of materials; another employs itself in laying out the bottom and partitions of their cells; a third is employed in making the inside smooth from the corners and angles; and the fourth company bring food for the rest, or relieve those who return with their respective burdens. They often change the tasks assigned them, those that have been at work being permitted to go abroad, and those that have been in the fields already taking their places.' An admirable arrangement, truly, quite independent of age or qualification, if only it were correct. We are not told by *what* or *whom* 'the tasks are assigned,' but suppose either by the king or queen!

'W. White, sen.,' who dates his *Complete Guide* from 'Shutford, near Banbury, Oxon, September, 1771,' commences his small treatise of some ninety short pages with the not very diffident statement that he is about 'to give a more particular and satisfactory account (of the bees) than hath hitherto been made public by any person whatsoever.' He has not advanced very far before he tells us that, 'Some of our authors have given an account that the drone is the male bee, but I am of a different opinion,' although he does not tell us of what use he supposes the drones to be, or what is their sex. Later on, however, he says, 'Some people pretend that before the drones are slain—at the "latter end of July"—they leave the small bees (workers) pregnant for the next spring, but it is my firm belief that there is no female among them, the queen bee excepted.' Our author gives excellent directions for driving and for making artificial swarms. When the swarm has been driven from the parent hive (skep), he gives directions for 'proving' it thus:—

'Take a cloth, and spread it on the ground, and put a small stone under it to keep it hollow; then, with a ladle, take them out of the hive, and lay them down by the other hive, and they will run in. But observe well that you let not the queen bees escape your notice. The first which you see do not interrupt, but when you perceive a second, catch her, and put her into the old stock, and set the swarm up; but if you find above two governors, you may make more swarms. Sometimes they will breed ten or twelve governors. On the contrary, if you find but one in a stock, then you must have one by you ready when you are putting them into the hive where your swarm is to continue; when your bees are running in, then put your governor amongst them, and they will all run up together; so with running, and the heat of the bees, she receives the same smell with their breath, and they receive and accept her as their own, as if she had been bred amongst them. Sometimes, by chance, they may dislike her; and if they should at any time do so, let them have their own governor, and let the old stock be without one for a whole day, then put the stranger into it, and they will receive her.'

Further, he advises that:—

'If the swarm should chance to dislike their governor, take it and turn them all down upon a cloth, and set a fresh hive just by the cluster of bees; then stir amongst them, and disturb them a little, so they may gradually run in. Their running in together never fails to make them reconciled to their new governor. By this method you will prevent them from destroying their governor at any time. If they should dislike her, it will be known in about ten or fifteen minutes time; if they do not disagree in this time, they never will, but will go eager to work, and work as well as any natural swarm in the world.'

Several modern writers on queen-introduction have stated their most successful method of introduction to be

based upon the principle here enunciated, without, as we chance to know, having read a line of our author. So true are the words of the great 'Preacher,' 'That which hath been is that which shall be: and that which hath been done is that which shall be done: and there is no new thing under the sun. Is there anything whereof men say, "See, this is new?" it hath been already in the ages which were before us.'

THE CENTRAL ASSOCIATION.—We are sorry that Mr. Woodley should have misconstrued our slight allusions to the controversy respecting the constitution and conduct of the B.B.K.A. raised by himself and two or three others in our columns, and beg to assure him that we give him full credit for wishing well to the Association, although his views on the subject do not accord with our own. Taking one only of the proposed changes, viz., that of making County Representatives *ex officio* members of the Central Committee, this would enable the former to outvote the latter at any time and upon any subject on which they were agreed, and would be giving the whole power to County Representatives, and stultifying that of the Executive. We are far from saying that such would be the case, indeed our own view is that such a law would remain a dead letter, as we believe few of these gentlemen would undergo the trouble and expense of attending the monthly committee meetings.

If alterations must be made, by far the better plan would be, to our thinking, to sever the connexion between the Central and the County Associations, to a great extent, by doing away with affiliation altogether. The latter would then be able to unite or to dissever, to amalgamate or to atomize, as might best suit their convenience. Grown-up children like to rule themselves, and it is best that they should do so.

To the Central Association would remain work in abundance, such as the organization of one or more annual shows, whether in connexion with the 'Royal' or otherwise: the examination and granting certificates to experts; the publication of bee literature: the organizing and holding of meetings, both at its shows and quarterly: the appointment of judges, &c. It might be open to county and district secretaries to become members of the Central, say by paying an annual subscription of 20*s*., and for their members thus to enjoy the privilege of making entries at low fees at the Central's shows, and other advantages. But these suggestions are merely hints—a skeleton which requires covering with flesh, nerves, and sinews. We certainly would make an annual subscription of 20*s*. a *sine qua non* of membership. Mr. Woodley is in error in his reference to letter No. 1905, p. 594, the author of which signs himself 'A Member of the Central *Association*' (not *Committee*), and he speaks of himself as such only when he says, 'As a member of the Central *Society*, I believe our committee are most anxious to do all they possibly can to foster the growth of and assist County Associations.' So that when Mr. Woodley says, 'I am glad that a member of the Central *Committee* has at length broken silence, though I regret that he has felt it necessary to shield his name under a *nom de plume*,' he errs.

Accused officials are not in the habit of entering upon their defence in newspaper controversies, but defer it until explanation before an authorised tribunal can be made. While thus having indicated a course which, it appears to us, might be pursued with advantage to all concerned, we decline to enter upon a discussion of the points raised, as being *ultra vires*. At the same time we give credit for good motives to those who have raised the discussion. No doubt the *Audite alteram partem* will shortly be pronounced.

Our best thanks are due to Mr. Walton for the lucid and practical description of his autumnal feeding and winter preparation, published in our last issue and furnished at our request. Practical statements from experienced apiarists are most advantageous to our readers, especially to beginners, and we hope to see more of them in future.

GLEANINGS.

The *New York World* says, 'Bees-wax is refined so as to clear it from all foreign substances by melting the wax with about four or five per cent of water in a bright copper boiler, preferably heated by steam, and, after the whole is perfectly liquid and has boiled for some minutes, withdrawing the heat and sprinkling over its surface a little oil of vitriol in the proportion of about five or six fluidounces to every hundredweight of wax. Great care should be used, else the melted wax will froth up and boil over the sides of the pan. The acid should be well scattered over the surface. The melted wax is next covered over and left some hours to settle, when it is carefully drawn off for moulding without disturbing the sediment.'

In the *American Bee Journal*, James Heddon says:—'The last two very poor honey seasons will, I am confident, prove a blessing to bee-keepers. It has given us old veterans a splendid education: it has taught us how to make the most of disaster; it is a valuable acquisition to know how to make the most out of our business when good luck favours us, and it is also equally valuable to know how to make the most during disastrous seasons. Besides this, the markets are cleared out, consumers are getting the habit of paying a little more for their honey, and, better than all, producers, as well as consumers, are finding out that bees do not "work for nothing and board themselves," but that intelligent labour and capital are needed to make our business remunerative. The quality of honey in this section is some better than that of last year. We shall strive to winter our bees to the best of our ability, believing that honey-production offers more inducements at the present time than at any time during the past few years.'

Respecting the winter packing of bees, D. A. Jones says in the *Canadian Bee Journal*, 'Don't be afraid of having them too warm: plenty of protection in outdoor wintering is a good thing. We have tried to pack them too warmly, but have never succeeded. Leave entrance open, and have no fear for ventilation. Retain plenty of heat, and the ventilation will take care of itself so long as the lower entrance is open. A bee-keeper of our acquaintance packed from ten to fifty colonies each year with two feet of chaff or sawdust all around them; the entrance closed, and a wooden pipe of one and a half inch diameter resting on top of frames. This pipe was protected at the top by a miniature roof, and on warm days the bees would come clear to the top of the pipe, and occasionally cluster on the inside of the "roof." Never knew him to lose a colony wintered on this plan, and they always appeared in fine condition.'

In the *American Bee Journal* Dr. V. W. Morrison says he has had the largest experience with Carniolans in the United States, and at this time, the close of the third season with them, he has fifty colonies. The most notable new trait about them is their freedom from the disposition to 'rob,' or their vigilance in guarding their hives. With 200 nuclei colonies, daily exposure of their combs, and a poor honey season, it is remarkable that he has not had a single colony robbed. Such freedom from robbing he has never known when he had Italians. He is convinced that Carniolans are better honey-gatherers than Italians, Cyprians, or Syrians; and as for their gentleness, he has little use for smokers, and many colonies can be handled with the same impunity as if they were so many flies.

In the *American Bee Journal* B. Benton says his way of getting rid of ants is to kill all he can, and then to place green catnip over the brood where the ants gather, which he finds drives them away effectually.

The *Apiculteur* complains about the judging at the Brussels Exhibition. It thinks that the judges ought to be appointed by the exhibitors, and should listen to what they had to say before judging. In this case it says it is true that the judges were bee-keepers and amateur apiculturists, but exclusively moveable hivists, and makes some satirical and gross remarks about the Minister of Agriculture, who is at the head of the bee-keeping movement in Belgium. All those who have the progress of bee-keeping at heart will rejoice that although Belgium is making a late start, her bee-keepers have their eyes open sufficiently to see that it is only the moveable frame-hive that is of any particular use in bee-keeping, and that bee-keeping can only become a national industry when such hives are used. The Belgians have recognised this fact, and have therefore done wisely in appointing only those using and advocating moveable hives.

BEES *v.* FRUIT.

(*Report of Special Agent McClain to Entomologist of the Department of Agriculture.*)

I have, according to your instructions, repeated my experiments of last year for testing the capacity of bees, under exceptional circumstances, to injure fruit; adding such other tests and observations as the severe and protracted drought permitted. The house used last season, 10 feet by 16 feet in size, having sides partly covered with wire-cloth and large screen doors in each end, was used again this year. Two colonies of Italian bees, two of hybrids, one of Caucasians, and two of Syrians, were confined in this house.

These colonies were without food in their hives, and at intervals of three or four days were fed a little syrup for the purpose of keeping up their vigour and to prevent dying from starvation. A wood-stove was placed in the house, and a high temperature was maintained for a number of hours each day.

The conditions incident to an unusually severe and protracted drought were present within and without. The bees were repeatedly brought to the stages of hunger, thirst, and starvation, the test continuing for forty days.

Through the favour of Mrs. T. T. Lyon, President of the Michigan State Horticultural Society, I obtained thirteen varieties of choice grapes from A. G. Gulley, of South Haven. Every inducement and opportunity was afforded the bees to appease their hunger and thirst by attacking the fruit, which was placed before them. Some of the bunches of grapes were dipped in syrup and hung in the hives between the combs, some placed before the hives on plates, and grapes were suspended in clusters from the posts and rafters. The bees lapped and sucked all the syrup from the skins, leaving the berries smooth.

They daily visited the grapes in great numbers, and took advantage of every crack in the epidermis, or opening at the stem, appropriating to their use every drop of juice therefrom, but they made no attempt to grasp the cuticle with their mandibles or claws. I removed the epidermis carefully from dozens of grapes of various kinds and placed them on plates before the hives. The bees lapped up all the juice on the outside of the film surrounding the segments of the grape, leaving this delicate film dry and shining, but through and beyond this film they were not able to penetrate. I punctured the skins of grapes of all kinds by passing needles of various sizes through the grape and placed these before the bees. The needles used were in size from a fine cambric needle to a jacking needle. The amount of juice appropriated was in proportion to the size of the opening in the skins and the number of segments of the grape broken. The same was true in the case of grapes burst from over-ripeness. Bees are not only unable to penetrate the epidermis of grapes, but they also appear to be unable, even when impelled by the direst necessity, to penetrate the film surrounding the berry even after the epidermis is removed. Grapes so prepared, without exception, lay before the hives until dried up. If but one segment of a grape be broken by violence or by over-ripeness, the bees are unable to reach the juice beyond the film separating the broken from the unbroken segments until further violence or decay permits an entrance for the tongue. Clusters of sound grapes which I hung between the comb-frames in hives occupied by strong colonies were unbroken and sound after fifteen days' exposure in the hives. The skins were polished smooth, but none were broken. I also stopped up the entrance to several hives—containing good-sized colonies—in the apiary and in the wire-covered house, by pushing sound grapes into the opening, so close together that the bees could not pass through. By this means the bees were confined to the hives for days in succession, not being able to break down and remove the grapes, and although the skins of the grapes next the inside of the hive were polished smooth, none were broken or injured.

The past season furnished an excellent opportunity to observe the capacity of bees, under so exceptional circumstances, both in duration and severity, and I was called to several places by fruit-growers to witness the proof that bees were 'tearing open the skin of the grapes' and otherwise behaving in a manner altogether unworthy of an insect enjoying a wide reputation for virtue and orderly living. In each instance I succeeded in convincing the fruit-grower that the bees were simply performing the office of gleaners; that violence from other sources, or over-ripeness and decay, had preceded the bees, and that he would be acting the part of wisdom in following the example of the bees in gathering the grapes before further violence, or the action of the elements, rendered them worthless.

After grapes have been subjected to such violence, or have so far burst open and decayed as to make it possible for bees to injure them, and the circumstances are so exceptional as to lead the bees to seek such food, unless they are speedily gathered they would soon become worthless if molested. During the past season I made many visits to vineyards. One located near the apiary I visited every day, and my observations and experience with bees in confinement, and those having free access to the vineyards, furnish abundant proof to convince me that bees do not and cannot under any circumstances injure sound fruit. If from any cause the pulp is exposed, as from the attack of birds or wasps — the most common source of injury—or from the ovipositing of insects, or bursting of the berry from over-ripeness, and, if no other resources are available, the bees appropriate and carry away the juice, and the extent of the injury depends upon the degree to which the pulp is exposed, the sweetness of the juice, and the number and necessities of the bees.—*The Southern Farmer.*

CANADA.

Bee-keepers must feel discouraged at the very poor seasons for honey which have followed one another, and of which this present is the very worst. It is not for us to say who is to continue to keep bees; such a question must rather be left to the decision of individuals, and as circumstances may direct. The question is one of less importance, perhaps, to one who is really following another occupation, as a main, and is dependent upon bee-keeping for a livelihood in but a very small measure. But to one who has learned bee-keeping with the intention of following it as a business, and who will perhaps have thrown away— aside from the fact that any information secured may be of value in a measure—a number of years should he leave it, to such an one the question is one of very vital importance. It is always a bad policy to leave one line of business or one pursuit and follow

another. There is no pursuit that has not its disadvantages, its drawbacks, and even its time of depression. Who is so independent as the farmer, and upon whom is the prosperity of the country at large, and of business men and the manufacturer, so dependent upon, aside from any political view, as to the importance of every class? Few, if any. If the farmer does not have good crops, the business-men who are largely depending upon the farmers in an agricultural country do a very much diminished business. The farmers suffer from the same cause that we do, to a large extent at least, and yet they, as a class, do not propose to leave farming. We have failures in business on every hand, there is no pursuit in which the failures, so called, do not outnumber the successes. Study the question as you will, and what better pursuit can you, who are in it, point out to a young man? Every honest calling has its attractions, and those of a more sanguine and less careful disposition will allow these attractions to overshadow the other side until embarked in them and stern realities arise, and force upon us the fact that the thorn is everywhere, and it has been decreed by an immutable Power, that 'In the sweat of thy face shalt thou eat bread.'

We must, therefore, expect disadvantages in all pursuits when we become intimate with them; and there is no reason why bee-keeping should be left, if the apiarist can tide through until another season. There has been but a very slight percentage of increase. Another winter is ahead of us, and many colonies will starve for want of stores, and another spring to pass through.

Since the honey season of 1887 we have passed through a severe winter, and a still more trying season; all this will diminish the number of colonies to commence the honey season of 1889. Colonies should therefore be carefully attended to, and cared for. Clover generally has seeded well, and we may hopefully look forward to a better season. Now while we advocate that bee-keeping is as good as any other pursuit, we must also say that many have had rudely dispelled the visions of riches and plenty in a short time with little capital and less work. Bee-keeping requires to be understood to be carefully and wisely followed, using brain and body to the best possible advantage; then, and then only, one season with another, it will pay to keep bees. — *The Canadian Honey Producer.*

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their full names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The EDITOR of the "British Bee Journal," *c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' All business communications relating to Advertisements, &c., must be addressed to* Mr. J. HUCKLE, *Kings Langley, Herts (see 2nd page of Advertisements.)*

**** In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

HONEY IMPORTS.

The total value of honey imported into the United Kingdom during the month of November was 3140*l.*—JOHN COURROUX, *Statistical Office, H. M. Customs.*

DEFENSIVE WORKS OF BEES.

WHAT IS THEIR OBJECT IN BARRICADING THE ENTRANCES IN THE AUTUMN?

[1920.] I have just read the communication of Mr. C. N. Abbott (1902) and cannot agree with him as to the cause which determines the bees to barricade their entrances in the autumn. It is true I am not one of those who admit that animals have the faculty of foreseeing two or three months in advance what the weather is likely to be. Their senses, more acute than ours, make them sensible to atmospheric changes which are about to take place a little before we are able by exterior signs to see them, but that is all. Animals are, in fact, barometers.

I have, as you know, a colony of Minorcan bees derived from a queen which our colleague Mr. F. T. Andreu was good enough to send me this summer. This colony has barricaded the entrance in the way you have described on page 573.

When still in the nucleus state at the end of August, the bees commenced to barricade their entrance which was only 8 mm. ($\frac{5}{16}$ inch) high, and about 40 mm. ($1\frac{1}{2}$ inch full) long. When transferred to a large hive on the 20th September they immediately commenced their works of defence and continued them as I lengthened the entrance, which became eventually about 200 mm. (nearly 8 inches). This is the only colony in my apiary at Nyon which has constructed any works of defence this year.

However, my bees, the common as well as Italian, Cyprian, and hybrids, know perfectly well how to build barricades when they are necessary to protect them against an enemy.

In 1885, in consequence of a neglect on my part, they made considerable constructions. Unforeseen causes kept me absent from Nyon for more than two months, from the 22nd July to the beginning of October. During the honey flow, I have my hives raised in front by means of wedges, from 8 to 10 mm. above the floor-board, this, therefore, leaves a large entrance under the whole length of the front of hive. Not foreseeing that I should be absent until October I went away without removing the wedges.

On my return I soon noticed that all my hives, except one single weak one which had not been wedged up, had constructed works of defence with a mixture of propolis and wax somewhat similar to those described by Mr. Abbott. The combs in my hives are placed at right angles to the entrances (cold system). The bees had built in the front part of the hive, near the bottom, a sort of horizontal partition, level with the bottom bar of the frames, and connecting them and the front together. These works are more or less extended according to the hives.

Wherefore were these defences? Because in September of 1885 the *Sphinx atropos* (death's-head moth) was very plentiful in Switzerland, as it was also in some other countries, including Spain and the Balearic Islands. My *Revue* of that date contains several communications corroborating this. The winter of 1879–80 was exceptionally rigorous in Central Europe; at Nyon the thermometer went down to —19° C. (below zero Fahr.); in other places to —23°; in Paris to —27°, &c. However, I need hardly say that not one of my colonies barricaded its entrance in the autumn of 1879.

According to Mr. Abbott, the frames placed parallel to the entrance (warm method) and narrow entrances are more favourable for wintering bees; how is it, then, that his Minorcan bees have nevertheless made constructions *to better protect themselves from the cold;* whereas with me, when the thermometer descends every winter to —12° C., and frequently to —14° C., my bees of the different races do nothing of this sort, and that notwithstanding that my frames are placed the other way, and the entrances made wider? However, you know with what success I winter my bees.

Minorcan bees, by tradition, barricade themselves in August and September in their own country to defend themselves against certain enemies, and my bees at Nyon also know how to make barricades when their master has neglected to reduce the height of the entrance to prevent the incursion of the death's-head moth.

M. Andreu writes me: 'If your Minorcans have

barricaded their entrance, I think it is to protect themselves from cold. Here we have the rose-beetle (*Cetonia*) during summer; also the sphinx in autumn, but our bees do not barricade until cold comes.' However, the same bee-keeper writes to the *British Bee Journal* (vol. xiii., 1885, p. 361) :—

'I have been much troubled lately with the death's-head moth, which the *Bee Journal* speaks of. I have taken away some fifteen or twenty. At first they got into the hive, but the bees did not let them do any mischief. Now the bees have so intrenched themselves with "casemates and bastions" inside the entrance, that the sliding doors are of no account. My hives are full of propolis, &c.'

It is at the end of August that my Minorcans commenced their barricades, at the period when usually the death's-head moth makes its appearance in the different European countries. Moreover, I cannot see how the small columns of propolis which the bees have built across the entrance at distances of one centimetre the one from the other, can in any manner protect them against the cold.

In my *Revue*, Vol. 1886, pp. 17, 18, M. Chaperon describes the defensive works constructed during the autumn of 1885, and which are exactly similar to those which Mr. Abbott has observed with him; and he adds that he has found them in hives on the 'warm system' as well as those on the 'cold system;' except that in the former the partition is fixed to the first frame, and is perforated in the middle by two or three holes.

M. Bignen's letter (*Revue*, Vol. 1886, pp. 129, 130) is very instructive. With him the death's-head moths are very numerous, and he and his son killed more than 150, forty-two of which they killed in one evening, and he witnessed their attacks at the entrances. In hives where the entrances were more than seven to eight mm. high, he saw the bees hurrying to accumulate propolis to stop the invaders. His conclusion is, that where there are many hives and few moths the bees will succeed in having the mastery, but where the contrary exists there they will be a long time before they are able to construct sufficiently strong works to protect themselves.

Were this letter not already too long, I could mention many other facts, but will restrict myself by referring to *Revue*, 1885, p. 86, to an unpublished letter of Burnen's, François Huber's assistant, who speaks of the barricades constructed by bees as a defence against the death's-head moth. See also Vol. 1886, p. 51, 126, and 129. A partisan of the warm system and of narrow entrances having endeavoured to attribute the construction of defensive work by the bees in favour of his theory, I felt bound to demonstrate that these works are from quite a different cause than that of the foresight of a rigorous winter.—Ed. Bertrand, *Nyon, Dec. 8th.*

MINORCAN BEES.

[1921.] I regret that my epistles, such as they are, should so often need a postscript to complete them. And this seeming to be the case just now, please allow me to add a few words more. And first as to our bees. It is true that we often manage them with ease, they showing good temper. Our home apiary has often been visited by any number of ladies and gentlemen, and seldom do any of them carry off a sting. Last week I not only took out the honey and brood combs from a hive to show to some military gentlemen, but actually persuaded one of them to hold one of said combs, which he did with inward trepidation, but no bad results. Of course I would not have compromised him had I not been morally sure of success.

But I must add to this the reverse of the picture, for we have often, in manipulating, come across a hive so ill-tempered that it was difficult to do anything with it, and for no apparent cause. Only last spring I met with such a case in a colony (a nucleus of 1887) which flared out with such fury and slung its venom over my clothes to the extent that I was obliged to give up in disgust. Three successive times did I undertake, with smoke and finally rough usage, to subdue the rebels. But they conquered *me* every time. I was so vexed with the colony, which had been a favourite with me, for I love to potter with helpless little nuclei which seem to show a sense of gratitude for any little favours. I was, in fact, *afraid* of it, and on the morrow destroyed it by removal from its stand, forming a nucleus out of its foragers. It has given me no further trouble. However, I have little doubt that in Johnny's hands (my youngest son) they would have quietly surrendered, for the bee seems to be electrical or magnetic in its nature and movements, and subject to likes and dislikes, much depending on the person who hypnotizes it, as it were, with gentle but firm treatment.

For instance, it is easy enough for us in spring, when the young bees are working in the sections and the weather fine, to take out a few pound sections from on top, full of live bees, peaceful and quiet as any flies, even without smoke. And even the cases are handled with little disturbance. But when you once get to the brood-nest underneath they sometimes seem to lose all patience, and you must then either subdue them into terror, or cover them up and shut the hive. From these explanations you may be able, with your long experience of bees and races of bees, to judge of the quality and 'true inwardness' of the Minorcan bee. Our bees being unused to hibernation, in the strict sense of the English word—for in winter, just as soon as a storm is over, which had kept *most* of them indoors, they issue forth livelier than any crickets—this may account for their liveliness when the hive which you mention was uncovered. They must also, it seems to me, be more sensitive to the cold of England and Switzerland, which would naturally make them irritable and inclined to sting. But with my present experience I should now say that our bees are *not* gentle—nothing like the Carniolans, for instance.

Second, as to propolis. Such is the quantity they manage to stick together here, that it at times hinders manipulations to a considerable extent; and 'handling hives instead of frames,' which practice some American bee-keepers think must ultimately prevail, might be a difficult matter. But this is in the fall of the year—in winter also—while our honey-bug (*Cetonia opaca*) thrives in May and June, or at most July. I had, therefore, concluded that these extensive barricades were mainly directed against the heavy northers—north-westers and south-westers which here abound in winter and spring. Our island is healthy on their account, and we have no foul brood.

Third, as to our honey-bug, as it is called here. The rose-bug which you mention (*Cetonia aurata*) is common to the Peninsula. But we have none here, for our bugs have mostly an affinity with the African species, and are very black—our bees also probably partaking of that characteristic. In fact, we are on the dividing line between Africa and Europe, our species partaking more of the former than of the latter. Our only honey-bug is the *Cetonia opaca*, nearly double the size of the *aurata* of the South of Europe. The females are so large that they often get stuck in the entrance, where we knife them. A few miles inland this bug is a great nuisance to the bee-keeper, making excluder zinc at the entrance a necessity, and occasionally blocking it up. Our learned naturalist, Señor Cardona, whom English gentlemen always visit, has a splendid collection of *Cetonia*, one thousand varieties alone belonging to our little island.

Lastly, I understand that the translator of your *Guide*, Mr. Mercader, has been allotted a gold medal—probably for the said translation. Our house has been awarded *three gold medals*—one for best honey, one for observatory hive with live bees, and one for sections and hives. The

only other medals allowed our apiculturists were a silver one for honey to Señor Femenias, and a copper medal to Mr. Pons for hives. And thus endeth our Barcelona Universal Exhibition, a very successful affair in every respect.

I beg, Mr. Editor, you will excuse this long letter, and I will promise henceforth to be shorter.—F. C. ANDREU, *Port Mahon, Minorca, Dec.* 12.

THE BRITISH BEE-KEEPERS' ASSOCIATION.

[1922.] Your columns being now open for discussion on the Association, I should like to support the suggestion of 'U. H.' in your issue of December 6th. It seems to me to be altogether a mistake of the B.B.K.A. to have as one of its rules the teaching of bee-keeping to cottagers. This was all well enough at first, but should now be entirely relegated to county or district Associations. Why not make the B.B.K.A. an Association for bee-keepers? County Associations derive little or no benefit from the Central which they could not get just as well now by keeping back their guinea, and spending it in medals, &c., at first hand. I have not been very long at the helm of a County Association, but quite long enough to find this out. The B.B.K.A. says that it derives no benefit from county affiliation, and the counties seem to be of a like mind from their point of view. Then, if not a benefit, why continue it? For instance, I find that the compulsory publication of an annual report in 8vo. is a needless expense when a report, as good, if not better, could be inserted in one of the county periodicals, and cost perhaps nothing at all. —DUNBAR.

THE B. B. K. A. AND AFFILIATED ASSOCIATIONS.

[1923.] I was agreeably surprised to see the article from the pen of the veteran Mr. W. B. Carr copied from the *Record* into the pages of this *Journal* issued on the 13th inst. As it is one with which the most radical reformer can find the least fault, though I do not agree that any very alarming phase in the politics of bee-keeping has been reached. For obvious reasons, my being appointed one of the Sub-Committee to consider the advisability of altering the rules of affiliation, I do not wish to enter into any of the *pros* or *cons* of these alterations, but write only to agree with Mr. Carr's timely warning to 'bear and forbear.'

I am quite sure that if he had been present at the Sub-Committee meeting held a short time since he would not have for one moment thought that we looked anything like a formidable band of conspirators, as a more unimpassioned assembly never took place; one of the points which took precedence of everything else was the fact that the leading lights of the present Committee were those who had for years, with unfailing energy and even considerable monetary loss, brought the industry of bee-keeping to its present flourishing and exalted position, and also inaugurated each one of the County Associations.

The British B. K. A. have spent their energies in the production of County Associations. Why should they, then, endeavour to swamp the mother Association? Such is far, very far, from their object. The object aimed at, and that solely, is to place the British on even a firmer footing than she now has; to increase her financial stability, and not to alienate themselves from her or from other Associations, but to forge a stronger bond that will defy any attempt at severance.

There will be no attempt made to sever the friendly relationship which must exist between the parent and affiliated Associations if bee-keeping is to prosper; neither is there, or has there been, the remotest hint that County Associations are to be sacrificed for other affiliated Associations. This latter is simply an ogre conjured up in the imagination only. The effects of the wished-for reform must, and will, have an exactly opposite effect, and has been signally taken note of in the deliberations of the Sub-Committee. — W. B. WEBSTER.

SEASONS.—EXPERIENCE.—REMEDY FOR STINGS.

[1924.] The season in Scotland has been very wet, and it being my first at bee-keeping, I think I hear some of your readers saying, 'It will finish you then;' but not so, for considering the season and my inexperience, I think I have done fairly well.

In the beginning of the season I had two stocks in frame-hives, and one in a skep; altogether three stocks, from which I had five swarms, disposed off in the following manner: two were put in frame-hives and fed, one in a skep, one sought a home of its own, and the fifth was successfully returned to the parent stock in a frame-hive, but never took to the sections.

My honey, amounting to between 50 and 60 lbs., was taken as follows:—30 lbs. from frame-hive, which did not swarm; 12 lbs. from other frame-hive and its first swarm; and 7 lbs. from the stock in skep, which I drove.

I make some of my frame-hives (single-walled) myself, others (double-walled) I get from the village joiner, from whom I also get my crates, feeders, &c. I do not know in which hives the bees will winter the best, but I would rather have the single-walled for ease in working with. My single-walled hives are made with a middle tier, which gives plenty of room over frames (which are British standard size) for packing. To make sure of straight combs, I think the frames should not be more than 1¼ in. from centre to centre. I tried some 1½ in., but the bees built up between them.

I have eight stocks to winter this year, three of which are made up of cottagers' driven bees, which can be got here for the driving. There was very little honey to be found in the cottagers' skeps this autumn. I think from twenty hives which I drove there would not be 15 lbs. of honey. I have been advising them to feed, but they seem to grudge the expense, so instead of strong stocks next year they will most likely have empty skeps.

The following is a good remedy for stings:—Into a phial of about one gill capacity, put one teaspoonful of ground alum, and one teaspoonful of powdered ammonia, fill half full of warm water, but do not cork, or it will burst the phial. When settled, fill up, cork, and shake, and it is ready for use. The bottle must be heated before the warm water is poured in, or it will break Shake the mixture before using.—WIGTONSHIRE, *Dec.* 1.

WIDE ENTRANCES, RAPID FEEDING, AND IMPERVIOUS QUILTS.—DYSENTERY.

[1925.] There you are! ladies and gentlemen, with three matters of theory, which, when carefully practised, will fill your apiaries with the fourth, *i.e.* dysentery, and consequent destruction. It is astonishing to me, Mr. Editor, that bee-keepers are not content to go forward on well-known highways that lead to success, and that there is so strong a disposition to make short cuts along doubtful and disused roads that are misleading, and end in disappointment and destitution. Wide entrances for winter are bad, rapid feeding for winter is bad, and impervious quilts for winter wear are bad also, and those who practise or use them will have cause to remember my warning when it is too late—*i.e.* when dysentery and death are decimating the bees and filling the hives with corruption. I do not think any one will make even pretence-of-pretending that entrances 6 in. wide do not cause hives to be colder than if they were only 1 in. in width, and more particularly when the combs within the hives hang at right angles to the said entrances.

Nor will it be pretended that an impervious quilt will permit the escape from the hive of the moist vapours naturally generated by the bees in greater or less degree in proportion to their consumption of stores; but all will agree that *heat* may pass through such quilts more or less, no matter how carefully they may be padded. Here, then, we have the moist vapours retained in a cold hive with the inevitable certainty that it will condense and form water, which water, saturating the hive, will make it colder still, and will cause the bees to consume their stores more largely for the production of heat, and in the generation of heat more moist vapour will be produced, and there will be more condensation and more water, and the usual results will follow, much intensified if late rapid feeding has prevented the stores being properly stowed round the bee-nest, evaporated, and sealed over. Years ago, before the *B.B.J.* appeared, and its late editor (myself) had not assumed the position of 'bee-keepers' adviser,' when solid crown-boards had not given place to porous quilts, and '*feeding*' had not become a science, the 'wintering of bees' was the chief stumbling-block in the way of all bee-keepers, dysentery running riot and playing havoc in almost every apiary, and slaying the bees by thousands. The early numbers of the *Journal* contain reports of many cases of dysentery, and much advice on the subject, and in No. 19, for November, 1874, in an article from my pen, there are shown the causes of the disease and the means of prevention, and what I then wrote I adhere to now, after fourteen years' further experience with wide open eyes.

A cold hive, sealed against the escape of the vapours evolved from the bee cluster, and becoming colder and colder as its walls become damp, moist, and saturated, forces the bees to increased and increasing consumption of food for heat-producing purposes, and this acts and reacts in various ways; one of which, though not generally known, very much increases the liability to dysentery. It is a peculiar fact, that the abnormal consumption of food for heat-producing during severe weather causes such general disturbance and excitement of the bees and queen, that ovipositing is almost certain to be commenced and patches of brood to be produced; and, as a consequence, bee-pap has to be forthcoming, necessitating the services of many nurse-bees and the gradual filling and distention of hundreds of them with fæcal matter, which they cannot discharge because of the cold and the impossibility of a cleansing flight. I have written, and widened experience confirms me in the belief that it is true, '*that bees cannot discharge themselves except when on the wing*' — and therefore those in the condition above named, being unable to fly, burst in the hive, poisoning the atmosphere with their filth, and adding to the causes of sickness and disorder. In early days I opened many dysenteric stocks, and always found breeding going on, combs soiled with filth, and dead and dying bees upon the floor-boards; but now-a-days the disease has no terrors. I use a porous quilt (well padded above), which permits insensible upward ventilation, and the passing away of moist vapours from the hive. I never permit rapid feeding, but give the bees time to store and evaporate their syrup. I narrow the hive entrances to about three-quarters of an inch in width, and I permit a little ventilation under the back dummy, which prevents accumulation of deleterious gases in the bottom of the hive, and, as a consequence of these proceedings, dysentery and I have parted company for many years.—C. N. Abbott, *Southall, December 8th.*

[Our correspondent is rather hard on the advocates of the three modern theories on which he descants, and his forecast that 'a fourth ("matter of theory?") *i.e.* dysentery,' will supervene, causing destruction in our apiaries, is, we think, hardly to be deemed trustworthy when considered in the light of modern experience. During the last four years we have wintered successfully from forty to fifty colonies under the precise conditions condemned, viz., under enamelled cloth, supplemented by warm quilts, or chaff or cork cushions, with ample lower ventilation, and we have experienced neither internal dampness nor dysentery, albeit under the old system we suffered from both, and especially from the blocking up of the narrowed entrances by dead bees and refuse matter. As regards the advantages of rapid feeding, we thought there were hardly two opinions, especially in a season like the present, when winter stores were simply *nil*. Our own colonies were fed from rapid feeders during the latter part of August and throughout September, and their stores were duly ripened and beautifully sealed over. As we find things, so we speak, and we are quite sure our old friend would not wish us to act otherwise. We may add that some of our colonies are wintered with entrances the whole width of the hive; these were kept wide open, and merely protected from drifting snow and rain, while our frames all range at right angles to the entrances.—Ed.]

EXPERIENCES.

[1926.] I beg to tender my sincere thanks for the good and timely advice contained in your *Journal;* advice which, had I been without, would have ended in total loss of stocks to myself, and to several of my friends. I am sorry that I can't induce bee-keepers to invest in the weekly *Journal;* they don't see the good to be derived by so doing as I do. They think they have done very well hitherto, and expect to do likewise in the future. I do know this, that had I not gained the knowledge by a careful perusal of your *Journal, Record,* &c., bee-keeping in my own immediate neighbourhood would have by this time been over.

I have six stocks on frames, all fed. To feed I have used 1 cwt. of sugar as advised, fed to bees by use of three rapid feeders, my own construction, from knowledge of how to make per *Journal,* over the frames a cake of candy from an excellent recipe in December *Record.*

Yesterday, Sunday, I could not resist the temptation of looking to see how matters stood. I had a theory; this was it: The weather here in the Fylde, has been so mild since the departure of autumn that, except on a few occesions, the bees have been almost daily stirring (I mean, a few dozens of them); on sunny days more especially so. This constant exercise must necessitate a larger consumption of food, and hence the stores to carry them through the winter must be greatly diminished. That being the case, whilst the weather is open, I thought I would look. I looked, and satisfied myself that if the weather does not turn to frost, and be like a 'gradely' winter, as we say in Lancashire, skeppists or *boxists* will have been thrust out, and probably as many bar-framers too. So I made my cakes and put them on, wrapped up snug. This is how I do it: Contract to number of frames able to cover, pack behind dummy with cork-dust, or scales or husks from the windmill, which are perfectly dry, having been stoved. This packing is in a bag of paper just the size of spaces, and kept up in its place in front by tacks, so as not to obstruct entrance or exit. Quilt on top of cake, and, of course, top of frame also. I procured four boxes from grocer (mustard boxes), made them size of hive (interior measurement), tacked quilting on bottom, filled up to depth of 3 in. with cork-dust. Above box is a sack doubled thrice. Entrance about 3 in. wide, $\frac{3}{8}$ in. high.

I was visited by the expert on September 19th, who found two stocks queenless, of which I was well aware. Young queens were in the hives, but not fertilised. He advised me to unite or buy queens. I bought one from Webster, and introduced it. It immediately began to lay, and I strengthened it by two bars of brood from two best hives. The other young queen was born August 29th. I had hopes of her becoming fertilised,

and would not supplant her. I had watched her come and go many times, but without success. On September 25th I noticed eggs. Good. Bnt, I thought, don't be in a hurry. Will they be fertile? that is, produce workers? In a few days the capping satisfied me. I put on a feeder, and had the satisfaction of soon seeing eggs and brood on four frames, the centre ones being almost filled. Is it exceptional for queens to mate at that age, over thirty days?

On Saturday last, having noticed the ravages of wax-moth, I fumigated all spare combs and sections with sulphur, and packed up securely. Not that I had not done so before; I had them in air and insect-tight boxes, but it was well I looked at them.

In one of my rapid feeders, which had not been emptied, I found two dead bees and a queen. I am satisfied it was a queen by comparison—length, shape, &c. Now, how is it that a queen was found in the rapid feeder? Is it a circumstance before noticed? Do they themselves go in quest of food? The worst about it is, I can't remember from which hive the feeder was taken, having used three. Will you kindly answer my queries and accept my thanks for past favonrs?—HONEY FLOW.

[It is very unusual for a queen to be fertilised so late in the season, there must have been drones in your or some neighbouring hive. Fertilisation thirty days after hatching is also an unusually long period, but in your case there was no means of telling but what she had been fertilised some time before. Queens when fertilised late in the season are often rather dilatory in commencing egg-laying; by this you will see that no doubt she was fertilised some time before the expiration of thirty days. Are you quite sure it was a queen you found in the rapid feeder? Bees drowned in syrup frequently become so elongated that a novice might mistake such an one for a queen. You should have sent her to us for identification. An accident of this kind might occur at the time of placing on feeder, the excitement consequent on same causing the bees to rush up in a body to the feed, the queen being carried along with them. If you have the bee still in your possession and will send it to us we will definitely settle the point for you.—ED.]

NOTES ON BEE-HIVES.—SECTIONS.

[1927.] As the subject of glass sections is being discussed at the present moment, I should like to say, during the honey season of 1886 I had some glass sections worked which were made from ronnd 2-lb. honey-bottles. I took my glass cutter and cut slices off the bottle, like Fig. 1. It was difficult to cut the bottles, but I managed to make sufficient to try what I wanted. The black lines on Fig. 1 will show where the cutter was applied.

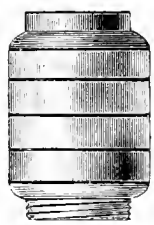

Fig. 1.

I took two slices, each $1\frac{1}{4}$" wide for each section, placing a sheet of Dadant's extra thin wax foundation—between these slices, and by means of a small amount of pressure, the foundation was firmly fixed instantly and without the slightest trouble, excepting cutting the superfluous foundation from around the outside.

Next, each section was placed in a frame (very similar to what was illustrated in *Gleanings* a few weeks ago) made from a rectangular piece of wood $1\frac{1}{2}$ inch thick. Holes were turned out on the lathe of sufficient size to contain those circular sections. The rectangular piece of wood was cut to fit within a Heddon wide frame, and then it was sawn into two equal parts.

Fig. 2 will show the shape of the wood block with three holes into which the glass sections are placed. The block fits into a Heddon frame not delineated.

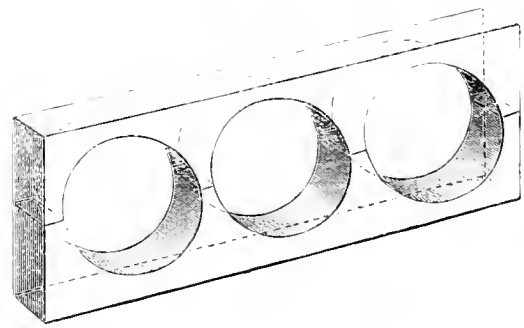

Fig. 2.

These sections looked lovely! I had them beautifully sealed over, not a single pophole in any of the few that were prepared.

If the glass sections had been cast they would have been excellent. Was it not curious that a similar idea should have occurred in America, only wood was used instead of glass?—T. BONNER-CHAMBERS, F.L.S., *Tref Eglwys, Caersws, Montgomeryshire, November 27th.*

CROWN-BOARDS.

[1928.] I should like to suggest to the writer of (1806) that he will find the crown-board he purposes making improved if he divides it into three or four parts. I have one divided into four parts, each part is four inches wide, and has a quarter-inch rib underneath. It has been in use since last March, and I am so well satisfied with it, that I intend making more like it. It is a great advantage to the bees to be able to run over the tops of the frames, also to have the tops of the frames free from propolis is a great comfort. The tearing off of the cover, be it calico or cloth, is very irritating, both to the manipulator and to the bees, and often disarranges the frames; also it gives the bees a lot of hard work to plaster it down again. I consider the covering of a hive the most defective part of the hive, and greatly needs improvement. The crown-board is indestructible, and is by far the cheapest in the end since only one flannel is required, and even this can be dispensed with. There is no crushing of bees when replacing the boards, as with the ordinary cover.

I adopt the same plan with my section-crates. The crate holds eight sections, and a lid with a quarter-inch rib underneath covers the crate. The passage over the sections of course checks bee-passages in the sections, and prevents propolis on the top of the sections, and facilitates work. The lid can be lifted off with one hand to see how the sections are getting on; owing to the ease of lifting it the bees offer, as a rule, no objection to its removal. Both these arrangements will be found lacking in some respects, since a disadvantage is the companion of every device under the sun.—HIVE.

Echoes from the Hives.

Pontypridd (near), December 14th.—My sixteen stocks have so far withstood the rigour of winter (?) exceedingly well. To-day, dnring a burst of sunshine, they enjoyed a general flight, and did a little business besides in the way of pollen-gathering, which proceeding at this time of year seems to me to be decidedly heterodox. Whence was this pollen? Mr. Dobbie does not credit borage with any pollen value, or I should have no doubt in saying that this late bee-bread came from that source. I certainly observed the bees, laden with small white

pellets, busily engaged on these flowers. It looks as if I shall have borage in flower for some weeks yet.—EAST GLAMORGAN.

Kirklandhill, Dunbar, December 11th.—Perhaps it may be of use to you to say how I make my candy for bees. I first make 'autumn' syrup and into this stir 'iceing sugar' till the stuff is like 'Good' candy. I find it excellent.—DUNBAR.

Malta, December 8th.—Hives going very fairly well. Bees not been shut up yet for a single day, and the honey coming in fast, and heaps of pollen. Native queens breeding fast; in fact, in two strongest hives I have to take away full combs and substitute empty to give her room. Foreigners—Ligurian and Cyprian—not doing much; they are not yet acclimatised. I find feeding only necessary in August, September, and October. Unless we get some rain, I fear much for clover crop. I fancy natives much resemble Minorcans—very small and black, and determined honey-gatherers: very prolific, and somewhat savage.—MALTA.

NOTICES TO CORRESPONDENTS & INQUIRERS.

A. W. F.—*Over-salted Syrup.*—The sample of food sent was much, very much too salt; there must have been quite a large quantity put in, as half-an-hour after tasting it we could still taste the salt distinctly. We must own that we have never dosed our bees with salt in so immoderate a manner as to cause any destruction of stocks. We should consider that the food was too salt for their consumption, and so they had starved rather than eat it. The surviving stock, no doubt, had stores of its own and so had no occasion to feed from the salted stores. An immoderate use of salt will kill some animals, especially the carnivora, but whether such applies to bees we are unable to tell.

R. S.—1. *Sufficiency of Stores.*—We should feel inclined to say that your bees have sufficient stores to tide them over the winter; but as you appear to be apprehensive of their food running short, you could quietly insert a cake of candy over the frames without disturbing the cluster. 2. *Watertight Hives.*—By covering them with Willesden Card.

T. D. G. C.—We regret that we are unable to say whether the lecture adverted to has been printed *in extenso*. Professor Miall, Philosophical Hall, Leeds, would be able to give the desired information.

J. D. M.—We thank you for trouble taken in forwarding the extracts; but we have neither the desire nor the time to notice their origin.

J. W.—*Hive blown over.*—We quite approve of the means you have taken to rectify the mischief.

J. K.—The sample of sugar sent is very good, but not quite as suitable as the 'iceing' sugar for the purpose proposed.

*** *In consequence of the intervention of Christmas day, our next number will be published on Monday, the 24th. We should therefore be obliged by all communications and advertisements being forwarded by Saturday, the 22nd. The next number will contain Title and Index to the Volume for* 1888.

Business Directory.

HIVES AND OTHER APPLIANCES.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin
APPLETON, H. M., 256A Hotwell Road, Bristol.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BURTT, E. J., Stroud Road, Gloucester.
EDEY & SON, St. Neots.
GODMAN, A., St. Albans.
HOWARD, J. H., Holme, Peterborough.
HUTCHINOS, A. F., St. Mary Cray, Kent.
MEADHAM, M., Huntington, Hereford.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.
STOTHARD, G., Welwyn, Herts.
WALTON, E. C., 82 Emmanuel Street, Preston.
WEBSTER, W. B., Bintield, Berks.
WOODLEY & FLOOD, 26 Donnington Road, Reading.
WREN & SON, 139 High Street, Lowestoft.

HONEY MERCHANTS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BALDWIN, S. J., Bromley, Kent.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

FOREIGN BEES AND QUEENS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
BENTON, F., Laibach, Carniola, Austria.
EDEY & SONS, St. Neots.
HOWARD, J. H., Holme, Peterborough.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

METAL ENDS.

ABBOTT BROS., Southall, and Merchants' Quay, Dublin.
BALDWIN, S. J., Bromley, Kent.
BLOW, T. B., Welwyn, Herts.
EDEY & SONS, St. Neots.
GODMAN, A., St. Albans.
MEADOWS, W. P., Syston, Leicester.
NEIGHBOUR & SONS, 149 Regent St. & 127 High Holborn.

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THOMAS B. BLOW,

MANUFACTURER OF BEE-KEEPERS' APPLIANCES, WELWYN, HERTS.

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THE
BRITISH BEE JOURNAL

Communications to the Editor to be addressed 'STRANGEWAYS' PRINTING OFFICE, Tower Street, Cambridge Circus, W.C.

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Editorial, Notices, &c.

TO OUR READERS.

The present number brings us to the close of the sixteenth volume of the *British Bee Journal*. The copious Index we have compiled, together with the List of the Illustrations that have appeared in this volume, will enable our readers to form some estimate of the extent of our labours during the past year. Before we close the volume it behoves us to tender our sincerest thanks to all our friends and contributors who have assisted us in our work, and we hope that in the coming year the same assistance will be kindly vouchsafed to us. We have various improvements in view for the next volume, and we shall be pleased to receive any suggestions which will render the *Journal* more useful in upholding the industry of bee-keeping. Our best hopes are that the coming year may be one of prosperity and success; and we take advantage of the present opportunity of sending a Christmas greeting to all, trusting that the present festive season may be the happiest in their life's record.

BRITISH BEE-KEEPERS' ASSOCIATION.

1889.

The Annual General Meeting of the members will be held on Thursday, February 21st. Notices of motions for this meeting must be received by the Secretary not later than Saturday, January 26th. Candidates for election on the Committee for the ensuing year must be nominated not later than Saturday, January 26th. Printed nomination forms may be obtained upon application to the Secretary.

JOHN HUCKLE, *Secretary*.

King's Langley, Dec. 22nd, 1888.

IMPORTS AND EXPORTS OF WAX.

While British bee-keepers have ever felt a deep interest in the amount of honey imported into this country, and while they have had a laudable ambition to produce all the honey that may be required for home use, they have never sought to furnish the amount of wax that has been found necessary for the varied and manifold uses to which it is put, but have seemed quite content to leave it to be produced in other more favoured climes and countries.

We are not aware that any comparison has ever been instituted between British and foreign wax. In M. Dennler's pamphlet on *Bees-wax and its Conversion into Money* English wax is not as much as mentioned. In comparing the different kinds of wax his experience would appear to have been chiefly with Continental wax. He says, 'Germany has always produced a very much-prized wax for technical, medicinal, and artistic purposes, as well as the various Austrian provinces and Switzerland. Turkey is said to produce the best of all known sorts of wax. Turkish wax is also the dearest; usually bright-red in colour. France also produces a large quantity of splendid wax. Closely following the French comes the Spanish, in cakes of $2\frac{1}{4}$ to $3\frac{1}{2}$ lbs. in weight. Italy produces large quantities of excellent wax.' He also says, 'Of the various kinds of wax other than European, the West Indian, Egyptian, and Barbary wax are highly prized.

The American wax, of which large quantities find their way into this country, has evidently not come within the cognisance of M. Dennler.

The principal use of wax for many years was for Divine service, and as Christianity spread so did the consumption of wax increase. The bleaching of wax was a distinct trade, and some idea may be formed of its extent by the fact that in Hamburg, towards the end of the seventeenth century, there were above fourteen bleaching-houses for wax.

The wax trade suffered a great diminution at the time of the Reformation, seeing that tapers were disused at the services of the Protestant churches. At the present day the use of wax is not confined to its powers of giving light; it is extensively used for many other purposes. Its ductility and firmness render it essential in making wax figures and in modelling. It is also found very serviceable for many housekeeping purposes. Wax is employed largely in medicine, as also in numerous cosmetic specialities. At the exhibition that took place in Zurich some years ago there were shown twenty-two different articles in which wax was a constituent.

We now proceed to extract from the 'Annual Statement of Trade' the amount and value of wax imported and exported in the year 1887. The following tabular account specifies the countries

from which wax has been imported, together with the amount and value of the same :—

	cwts.	£
From Germany	7,049	15,371
„ France	2,722	13,975
„ Portugal	313	1,483
„ Italy	390	2,100
„ Morocco	1,613	8,013
„ Madagascar	793	3,847
„ Japan	1,433	3,597
„ United States of America	4,318	32,852
„ Chile	536	3,535
„ Brazil	1,256	3,043
„ Other Foreign Countries	847	3,787
Total from Foreign Countries	21,270	91,603
From West African Settlements	778	4,584
„ British Possessions in South Africa	1,322	6,872
„ British East Indies	679	3,973
„ Hong Kong	475	1,238
„ Australasia	682	3,871
„ British West India Islands	1,146	7,085
„ Other British Possessions	136	701
Total from British Possessions	5,218	28,324
Total	26,488	119,927

It would be very difficult to offer any opinion as to the quality of the wax brought into this country. There are so many different kinds of wax, vegetable, mineral, and insect, that without the aid of the experienced analyst, it would be impossible to predicate the virtues thereof. We may, however, from the value stated deduce the quality of the article. The mean value of the wax imported is 4*l.* 10*s.* 6*d.* per cwt. The United States send a large amount, and their wax fetches the highest value, viz., 7*l.* 12*s.* 2*d.* per cwt. Germany sends the largest amount, but the value is only about 2*l.* 1*s.* per cwt.

The following amounts are re-exported :—

	cwts.	£
To Germany	1,236	3,766
„ Holland	1,302	5,739
„ Belgium	1,150	4,877
„ France	945	3,634
„ Other Foreign Countries	2,247	6,853
Total to Foreign Countries	6,880	24,869
To British Possessions	216	424
Total	7,096	25,293

This, therefore, leaves for home consumption the large amount of 19,392 cwts. of the value of 94,634*l.*

We also give the quantities and value of wax imported in the year 1887, together with those of the two preceding years :—

1885.	1886.	1887.
38,295 cwts.	30,826 cwts.	26,488 cwts.
149,253*l.*	126,377*l.*	119,927*l.*

The amount and value re-exported during the same years were :—

1885.	1886.	1887.
10,328 cwts.	10,718 cwts.	7,096 cwts.
36,706*l.*	39,731*l.*	25,293*l.*

We gather from the above figures that there exists a great demand for wax ; and this demand proves that, notwithstanding all the advances which have been made in the arts and sciences, and all the progress that has been made in chemistry, no substitute has yet been discovered for bees-wax ; and it is a question to which a reply should be given by the intelligent British bee-keeper, to what extent his attention should be directed to the greater production of wax, more especially in the light of a disastrous season like that through which he has just passed,—a season in which his exertions for the produce of honey have been baffled and foiled by influences over which he has had no control.

HUNTINGDON BEE-KEEPERS' ASSOCIATION.

For some time it has been somewhat apparent that the Hunts Bee-keepers' Association had not achieved the object for which it was inaugurated. And after a season of no profit to bee-keepers, it was generally expected that the Society would fall through. A meeting of the Association was held at the Fountain Hotel, Huntingdon, on Saturday afternoon. The Right Hon. the Earl of Sandwich occupied the chair. There were also present A. W. Marshall, Esq., T. Coote, jun., Esq., the Rev. C. G. Hill, and several others, more or less interested in the object of the Association. The prizes awarded this season were distributed, and the Secretary, Mr. C. N. White, proceeded to explain the position of the Society. The object of their existence, said he, was to show to cottagers and labourers how to increase the produce of honey. But there they stood still. The cottagers wanted some assistance in the sale of their produce.

The Earl of Sandwich suggested that the agricultural labourer was welcome to take advantage of the opportunities given by Societies in a great variety of ways. He hoped they would, at least, see that the Society was working for their benefit.

Mr. White agreed that it was difficult to do anything for them. But their efforts for the agricultural labourer had not been to any extent in the direction they had been to others. When the Association was started, the main object was to get to them first.

Mr. J. H. Howard said it was evident that the labourer had been left far behind. The work of the Society had fallen into the hands of those for whom it was not intended.

Mr. Coote thought that one reason of failure was the difficulty experienced in placing the produce in the market. He would suggest that there should be a depôt at the principal market towns in the county where the cottager could sell his honey.

The Earl of Sandwich thought the cottager did not care about the matter.

Mr. Coote thought they would care about it if it was pointed out to them in the light of a means for additional income.

Mr. White said they had to consider whether they were carrying out the purpose of the Association. It had been said that they were making such rapid strides that the labourer had been left behind. They should be kept up with him. They, as members of the Association should have been with him helping him along. He was convinced that if a depôt was formed it would be a thorough success. It was not necessary that it should be a great expense to the Association ; but if it were, it should be incurred, and the annual show left altogether. He had suggested that the County should be amalgamated with Cambridgeshire. He thought that the two counties working together would produce an excellent result. The University alone would probably take pretty

nearly all the honey made in the two counties. Let the depôt be established, and let the shows go; and if it were the wish of bee-keepers in the county, it would be well to consider whether it was advisable to amalgamate the two counties. The Cambridgeshire Association was, he thought, in a somewhat similar position.

The subsequent speakers approved the idea. Ultimately, a committee of six gentlemen was formed to take the necessary steps in the matter before the meeting in January, and to make an appeal for funds.

It is generally hoped, adds our correspondent, that they will be successful, and that the Association will maintain the position in the county.

Correspondence.

The Editor does not hold himself responsible for the opinions expressed by his correspondents. No attention will be taken of anonymous communications, and correspondents are requested to write on one side of the paper only, and give their real names and addresses, not necessarily for publication, but as a guarantee of good faith. Illustrations should be drawn on separate pieces of paper.

Communications relating to the literary department, reports of Associations, Shows, Meetings, Echoes, Queries, Books for Review, &c., must be addressed only to 'The Editor of the "British Bee Journal," c/o Messrs. Strangeways and Sons, Tower Street, Cambridge Circus, W.C.' *All business communications relating to Advertisements, &c., must be addressed to* Mr. J. Huckle, Kings Langley, Herts (see 2nd page of Advertisements).

*** *In order to facilitate reference, Correspondents, when speaking of any letter or query previously inserted, will oblige by mentioning the number of the letter, as well as the page on which it appears.*

COUNTY ASSOCIATIONS AND THE BRITISH.

[1929.] I have read with much interest the discussions on this subject in the *British Bee Journal*, and as one who held the office of Hon. Secretary for over ten years in one of the first County Associations I feel great interest in their welfare. It is much to be regretted that the relations between the County Associations and the Central should be strained in the slightest degree. Much, no doubt, remains to be done, both by the Central and County Associations; but the want of funds is a great barrier. Great schemes may be formulated, but they cannot be put into practice for the want of the sinews of war to push them through the length and breadth of the British Isles.

Reforms may be needed, but in our desire to advance this and that pet scheme (for the most part untried), let us be careful and not sweep away the platform from which so much good has emanated. The old ship has weathered many storms, but it does not follow, because a plank here and a rope there wants repairing, that the craft is unfit for use, and must, as some would have it, be broken up and replaced by another of an entirely new design.

County Associations have many obstacles to steer clear of. Some counties may with advantage be divided into two or more Societies, and in other parts it is found well to unite two counties under one head. District clubs have been known to work considerable good, and always go hand-in-hand with the county organization; but in some counties this Home Rule has been the cause of the collapse of the entire machinery. Unity is strength, but the occasional failure of philanthropic schemes through want of concert among those starting and working them reminds me of the story which once happened to a pair of trousers. The young man to whom they belonged had purchased them for his wedding, and on the eve of that auspicious day he discovered they were too long by two inches. He told his mother and two sisters, who said, 'They must be shortened,' and said no more to him just then, nor to each other, all being busy. But in the course of the evening his mother went upstairs, cut off two inches, hemmed the trousers, and put them back in the drawers. At supper-time his eldest sister remembered his request; she stole away, and removed another two inches, and returned without saying what she had done. Bedtime came, and the younger sister bethought herself of his difficulty, and the trousers were again diminished by two inches. We can imagine the result when they came to be put on. If his mother and sisters had consulted together what mishaps might have been spared!

County Associations have carried out part of their original programme, the bee-tent is well known in many districts; but because driving bees and transferring combs have been thoroughly illustrated, it does not follow that the bee tent has become obsolete. There are the higher branches of scientific apiculture yet to be taught, and the minds of the rural population are now educated, and can follow advanced suggestions, which would have appeared worse than double Dutch ten years ago. Two or more shows in the year are good, as they create healthy rivalry, but prize schedules require revising.

Referring to county representatives and their relations to the British Association, a slight modification is required; but if the two representatives from each affiliated Association are to be *ex-officio* members of the central body—why, the very thought of it is sufficient! Every one knows the evil of a large committee, and if affiliated Societies are to be multiplied, and their representatives are (with the Committee of the Central) to form one body to carry out the work of the parent, a block must arise.

The British or Central Society's Committee consists of men who have done for so many years their best to advance the interests of bee-culture, generally, on philanthropic motives. The bee-keeping fraternity cannot but feel grateful to them for their zeal and the good they have accomplished. Their duties consist of looking after the interests of their members, coupled with those towards the affiliated Societies; assisting those in their infancy in a greater degree, and doing all in their power for the remainder. County members get very nearly the same advantages as the British members, but they cannot expect the same. If the affiliation fees were five instead of one guinea, things might be different, and the counties might claim the right of saying how the funds should be spent for the good of the whole.

The quarterly meetings were instituted for the various county representatives and the Central Committee to confer together, to compare notes, to show how this plan of action had failed in one county, and how that scheme had proved a success in another county; to have papers read on various subjects, &c. These national representative gatherings would be for the benefit of bee-keepers throughout the land; as by the interchange of ideas, and the experiences of all, would create confidence in bee-keepers, illustrating to some the folly of carrying out this experiment, or the benefit derived by continuing another plan. All must hope that whatever is decided on will be for the mutual welfare of both the County Societies and the British Bee-keepers' Association.—Wm. N. Griffin.

COUNTY ASSOCIATIONS OF THE B. B. K. A.

[1930.] The writer of letter No. 1905, who, I think, unnecessarily shelters himself under a *nom de plume*, disagrees with my remark that correspondence in the *Bee Journal* exhibits the fact that there is 'something wrong' in the connexion between the British and County Associations. He says he has failed to find anything showing that the relationship is 'unduly strained;' so have I, and I should regret to find the relationship in a condition that could fairly be thus described. I will only quote, in reply, from two communications on the subject. At the close of his letter (1860) Mr. Seager says, 'I should be exceedingly sorry if any action on my part tended in any degree to hinder the *revival of good feeling* between the parent Society and those in affiliation with it,' and Mr. Woodley (1861) says, 'I think no one will question the fact that the

interest of the County Associations in their worthy parent *has been getting somewhat cool of late years*, and *vice-versâ*. I imagine the parent has not shown that active interest in her children she did some few years back.'

Now to my mind these two quotations do suggest *something* wrong, and that is all I stated. But I think it would be far better for (1905)—I would much rather refer to that gentleman's name—instead of denying the existence of friction between the British and County Associations to assist in removing the cause.

I have now to reply to (1905's) query as to whether I, as a County secretary, have had a deaf ear turned to my suggestions. To that I reply emphatically No! and I take this opportunity of thanking Mr. Huckle and the B.B.K.A. Committee for the manner in which all my communications, except one, have been dealt with while I have acted in the capacity of County secretary. And now that the treatment of the County Associations by the B.B.K.A. is being brought into the controversy, I will mention the exception and the only cause of complaint I have personally to bring against the B.B.K.A. Committee. Last year when I found that the interest in our Association was beginning to flag, I acceded to the request of the editor of the *Hunts County News*, and wrote and illustrated a series of articles of Modern Bee-keeping gratuitously, with the idea of benefiting our Association. To illustrate at my own expense would have been a rather heavy item, and one I could not add to the expense I then incurred as secretary, so I applied to Mr. Cowan requesting the loan of blocks of certain illustrations in *Modern Bee-keeping*. Mr. Cowan, who was then starting for America, informed me that my communication would be laid before the B.B.K.A. Committee, and that he had no doubt my request would be granted. Judge of my surprise when I was informed that 'applications for the use of blocks have been so numerous that the Committee have (in the interest of the work itself) been compelled to retain them.' I thought then, and I still think, that when I was endeavouring at some considerable expenditure of time and money (with a limited exchequer) to benefit our Association, I ought not to have had the cold shoulder given me by the B.B.K.A. Committee, at any rate, on so small a matter.

(1905) next takes exception to my recommendation that half the B.B.K.A. Committee should consist of represntatives of County Associations, and speaks about five County Secretaries being members of the B.B.K.A. Committee at the present time. When I wrote my letter I was perfectly well aware of the composition of the B.B.K.A. Committee, but I should like to see those County Secretaries or other members on the Committee as the direct representatives of County Associations.

I was greatly pleased to see the prominence given in the *Bee Journal* to the article in the *Record* by Mr. W. B. Carr, and I trust that his advice to avoid 'a policy of exasperation,' and to 'bear and forbear,' will not be ignored. I do not, however, see what valid objections can be raised to such men as Messrs. Lees McClure, Grimshaw, Webster, and Woodley, being on the B.B.K.A. Committee as representatives of the County Associations, with the power to speak and vote in all matters relating to County Associations, if not on all matters before the B.B.K.A. Committee. I for one should be sorry for the effort of reformation to be the cause of losing the services of those gentlemen of position and influence by whose exertions we are almost wholly indebted for the present state of apiculture in these islands, and I cannot think that the concession would have that result.

Let the controversy be carried on in a determined but temperate spirit, and I am sanguine of a result satisfactory to all parties concerned.—C. N. White, *Somersham, Hunts, Dec. 15th*, 1888.

COUNTY ASSOCIATIONS AND THE B.B.K.A.

[1931.] I notice from your issue of the 13th inst. that Mr. A. D. Woodley [1909] has been kind enough to acknowledge the effect of (as he terms it) the sting of my communication inserted in a previous issue. I venture to hope that he will apply the remedy of membership; he will find it the best remedy for his present affliction.

Mr. Woodley has in previous issues made references to the constitution of the Committee of the Central Society, which may be very well passed by; his statement, however, in your issue of the 13th should receive some attention. He states that the County Secretaries now forming part of the Committee 'are on that Committee by virtue of their private subscriptions and personal influence.' Nothing of the kind; they are on that Committee by virtue of their readiness to serve a cause which they consider to be for their country's good, and by the votes of the members of the British Bee-keepers' Association.—A Member of the Central and of a County Association.

NOTES ON BEE HIVES.—SECTIONS.

[1932.] In looking over the article on 'Glass Sections,' in the *Bee-keepers' Record* for December, by Mr. William Raitt, I beg to point out that the first glass sections I described in the *British Bee Journal* last April were a kind that could be very readily made and tried by almost any bee-keeper without altering any existing apparatus. I intended, among other reasons, these simple glass sections to demonstrate the attractiveness and great beauty of glass sections; time and experience would prove their worth.

I cannot understand what Mr. Raitt means by saying he discarded glass sections years ago; yet he calls upon readers to witness that he claims to have used glass sections ten or more years ago, and that he can prove it. Perhaps Mr. Raitt will please give the exact meaning and weight of his statements, because I understand that discarded things do not invalidate 'patents.' I can assure Mr. Raitt that I knew not, at the time of sending the description to the *B. B. J.* last April, of any person having used, or ever having proposed, such a device. I certainly do not wish for any honour for myself which is due to Mr. Raitt.

I might here say that last Saturday I received a photograph of a glass section labelled 'The Hallamshire Glass Section'—this is similar, if not exactly identical, to the section I have described. The only difference that I can make out is the 'glazing glasses' are fastened on with wire, and that there are passage-ways, or 'pop-holes,' at each corner; while my sections are almost invariably without 'pop-holes,' not any wire is used, but the 'glazing glasses' are fastened sufficiently for all purposes with invisible glass-cement.

I understand from a friend, who has kindly and carefully looked over the back numbers of the *B. B. J.*, &c., for me, that the only new feature is the exceedingly simple, quick, and secure method I have described of placing or arranging the glass slips until the comb-work is sufficiently done to allow the wooden section to be removed *ad lib.*

Mr. Raitt dislikes the section I have described! 'There is nothing like leather.' Probably we may see the cause for dislike when the two are placed side by side; at present I can say all who have seen the sections I have described and presented to them have pronounced them to be the *ne plus ultra* of sections—all, excepting a gentleman in Cornwall, who has not yet reported, and I am certain some have seen both kinds in question. For my own part I might say I should never put on my table a wood section with a piece of glass for a bottom bar, and I believe no one would who had the choice from these two kinds.

I believe not many will admit that an extra thickness of $\frac{3}{32}$ of an inch to the inside of a section will make much, or any, difference to the prevention of 'pop-holes.' I am quite positive and certain with the Heddon frames, which I have mentioned in my 'Notes,' and which I use for sectional honey, that no better finish could be obtained with a glass bottom-rail or bar *alone*. There is not any difficulty with the top and bottom of sections—and for the sides I have pointed out how these may be entirely filled.

Now, although it is easy to make glass sections that can be handled *when empty* as safely as one-piece wooden ones by means of glass-cement, gummed paper, &c., this cannot be done *as quickly;* and I wish to leave it to the generosity of British bee-keepers to name their sections as they please, if any name is necessary for glass sections. I wish to add, if the very simple plan I have described will enable any one to obtain a few pence more for each section I shall be fully satisfied and very pleased.—T. Bonner-Chambers, F.L.S., *Tref Eglwys, Caersws, Montgomeryshire, December 8th.*

PORTRAITS OF BEE-KEEPERS.

[1933.] It has frequently occurred to me to ask you to add another acceptable feature to the many already existing in the weekly pages of the *Journal,* and I have at last resolved to do so without further delay. Now, what I want is a series of portraits of the founders of the British Bee-keepers' Association, published as an adornment and permanent record in our bee paper. A similar series is being issued in several special magazines that I might name, and the bee-men should not be behind the times. Give us likenesses of Mr. Peel, Mr. Neighbour, Mr. Abbott, Mr. Carr, Mr. Raitt, and many more, and, above all, of the President, ever foremost in all good works. For my own part I would value them, and I am sure so would every other reader of your publication, and I have often wondered why, when the 'pictures' of two foreign bee-keepers—both American—have already appeared, there should have been no thought of, or place found for, any of our celebrated and leading *British* bee-keepers. Are we to suppose that the young men whose likenesses have already been inserted in the *Journal* are the foremost and greatest of modern bee-keepers the wide world over? I thought Langstroth and Root would have been two to be so classed on the other side of the 'herring pond.' But it is not too late to supply the deficiency, so I hope you will soon make a start. What interest there would be in (say) a portrait of Mr. Abbott, the founder of the *Journal,* with engravings of some of his best known hives and peculiar inventions, and then in a few weeks to do the same for another of our British bee-keepers. This could be interspersed with occasional cuts from photos of some of our most picturesque and well-arranged British bee-gardens, showing the hives and surroundings just as they are. Of these you have already given some, and we want more. Those who live far and remote from other bee-keepers, and have no chance of seeing how other folks arrange their hives, would welcome such illustrations.—H. W. Lett, *Aghadery Glebe, Loughbrickland, co. Down.*

[We are very willing to entertain the suggestion above given, and from time to time we propose to give insertion to the portraits with biographies of some of our leading bee-keepers.—Ed.]

WASPS' NEST.

[1934.] In an open cow-shed, about ten yards only, from the back door of a house in this village a wasps' nest was discovered hanging from the roof between two rafters. It appeared to be large and strong; being in rather a difficult place to take, it remained undisturbed for two or three weeks, after it was first seen until they became rather dangerous. I, with a friend, offered to destroy it; and if any one who reads this happens to find one hanging just above his head when milking his cow or feeding his horse, and puzzled to know how to proceed, let him take the following receipt:—Two veils, unless you go alone, then one will do, only one person alone would but make a poor do alone; two veils, one uncapping knife, one syringe, and a little paraffin in a bucket, and the close woven sack-bag: and as these yellow jackets have a funny knack of creeping up one's legs, it would be as well to put your trousers in your socks, and your elastic bands on your sleeves. We will now suppose it to be dusk, and you and your friend with your weapons of war are on the spot ready for the fray. Choose the one that has the most courage, and ask him to stand under the nest and hold open the bag. I need not warn you there must be no rat-eaten corners, or even a mice-hole in it, or the victory will perhaps be on the wrong side; but the man of the bag will be impatient soon, for he can see the yellow jackets on sentinel all around their citadel: Your turn now comes—take your sword (uncapping knife); and having encouraged your comrade to stand firm for your own comfort, slice off the nest with one cut, into the bag it will fall, which close quickly and tie, and you have them safe and sound. The paraffin and syringe now come into play upon the odd few that are left sticking to where the nest was, and on the morrow it will be difficult to find above half-a-dozen flyers about. Plunge the bag over-head in water and leave it all night; and if you find a few able to creep, but not to fly, in the morning after a night in the water, don't be very surprised, as I fancy they drown slowly. In my case many were alive, but perhaps a portion of the bag got above water, and the bees—wasps I mean,climbed above water as well. This nest was quite a curiosity, being, what I should say a large one measuring 14 inches across. I took a bell-glass that once was filled with honey (not this year) and which weighed I think about twenty pounds. I thought of hiving this nest in it, but found to our dismay it was far too small. —J. W. Blankley. *Denton, Grantham.*

P.S. Now, Mr. Useful Hints, please tell us how often a wasps' nest is once formed in a round ball *shape,* it can be enlarged to this size without being pulled down and rebuilt, and also please give us a hint of what material is used for its construction, some say paper here. This looked more like the touchwood I use in my smoker.

[Wasps' nest are generally found underground. They are of an oval shape, and frequently measure from sixteen or eighteen inches long by twelve or thirteen broad. The substance of which these nests are composed is the fibres of wood detached from posts and rails and window frames. When the wasps have amassed a heap of the filaments they moisten them with some viscid glue from their mouths, and kneading it into a kind of *papier mâché* with their jaws, take it to their nest. This mass is reduced by them to laminæ of the requisite thinness for the building of their nests. The construction of the nest is a severe labour, and occupies those engaged in it several months. The architecture of a wasp's nest is an interesting study and will well bear comparison with that of the inhabitant of the bee-hive.—Ed.]

BEES AS FOOD.

[1935.] I have a question to ask about bees being used for human food. In *Science Gossip,* Vol. ix., p. 59, a Mr. Henry A. Aulde quotes a writer (Knox) who, he says, 'tells us that bees are eaten in Ceylon.' Now, can any one give more information on this point? Is it the larva or the fully-formed insect, that is recognised as an article of diet? It has occurred to me that in these days, when complaints are made that the price of honey is too low to make it worth while producing, that it would be an excellent plan to create an appetite and liking for

bees as an addition to the delicacies set on our tables at meal times. And rearing bees for the bees sake would be all the go, and with the facilities of the Parcel Post what family need be without bees to their bread as a wholesome, nutritious, and toothsome relish, all the year round? It is prejudice that prevents our experimenting and adopting blessings lying at our feet.—H. W. LETT.

[Some of the tribes in Central Africa are reported to be in the habit of eating the larvæ of bees.—ED.]

PHOTOGRAPHIC GROUP OF BRITISH BEE-KEEPERS.

[1936.] In the early part of the year an announcement appeared in the *B. B. J.* from Messrs. Abbott Bros., Southall, London, asking bee-keepers to send their photos to form a photographic group, which the above firm undertook to produce from the cards sent, and I learn from the best authority that a large number were sent. As I begin to fear that the whole thing was a hoax, possibly the firm I have named will say if the group is in course of preparation, and if so when we may expect proofs or copies ready, and the probable price of same; such information will oblige—ONE WHO SENT A PHOTO.

[We have ourselves no doubt of the *bona fides* of the Messrs. Abbott in requesting the portraits of bee-keepers to be forwarded to them, but we are afraid that they have not received the requisite number for their photographic group.—ED.]

SHALLOW FRAMES.

[1937.] In your issue of November 22nd (No. 1894), your correspondent wishes to hear from the correspondent who advocated frames of half-standard size, but does not mention *number or name*, and as no one else has answered him, I do so, as I gave (in a back number) a description of a frame I used. If your correspondent refers back, he will see that it has 1⅜ in. wide top-bar, with ⅛-in. space between, made by nailing ¼-in. pieces of wood on opposite sides at the ends, same as wide-shouldered frames, which makes the combs *too deep* for the queen to lay in, so are only used for extracting. If he fills the frame with thick worker foundation, and does not put too many on till they are worked out, he will find that they will not want numbering (better not), as the uncapping-knife will just slide down each edge of top-bar, and unseal the combs without shortening them, and they will fit anywhere. It often happens in practice that the bees do not fill all the frames at the same time, so are not all sealed when you wish to extract. I have had frames sealed in the centre of three tiers of frames, whilst the outside frames at top are not sealed. And as for convenience, those filled but not sealed ought to be put in the top crate, unless extracted, which I never do till the *bees* seal them, with empty frames at bottom. They must be interchangeable, or they lose their chief value; and if he has extra frames, so that he can close the hive at once, and use those from first hive to put into No. 2, and so on, he will find it very convenient. If he would ask questions, I should know better what to answer.—ALPHA.

Echoes from the Hives.

Thornton, Poulton-le-Fylde, December 21st.—On two days of last week bees have been out; rest of week damp. On 18th several children had roses and wall-flowers in their button-holes at school. One day's frost, 14th. Thermometer 50° in daytime, and about 38° to 40° at night and early morning. Can't remember so mild a time.—JNO. JOS. JAGGER.

NOTICES TO CORRESPONDENTS & INQUIRERS.

S. A.—*Robbing.*—We are continually giving cautions against spilling syrup about the hives; it is sure to excite any bees that may be flying about to commit robbing. The probability is that the robbers proceeded from some neighbour's hives.

T. M.—*Dysentery.*—This disease prevails only in winter and the early spring months. It is caused by feeding on unwholesome food, damp hives, and improper ventilation. We would recommend as a remedy a change of hive and a supply of wholesome food. The frames should be scraped clean, and a frame or two of sealed honey given at the sides of the cluster. Attention must be paid to proper ventilation.

The Schedule of Prizes at the Royal Agricultural Show, Windsor, will be given in our next issue.

Cases for the Journal, price one shilling, may be obtained from J. Huckle, Kings Langley, Herts.

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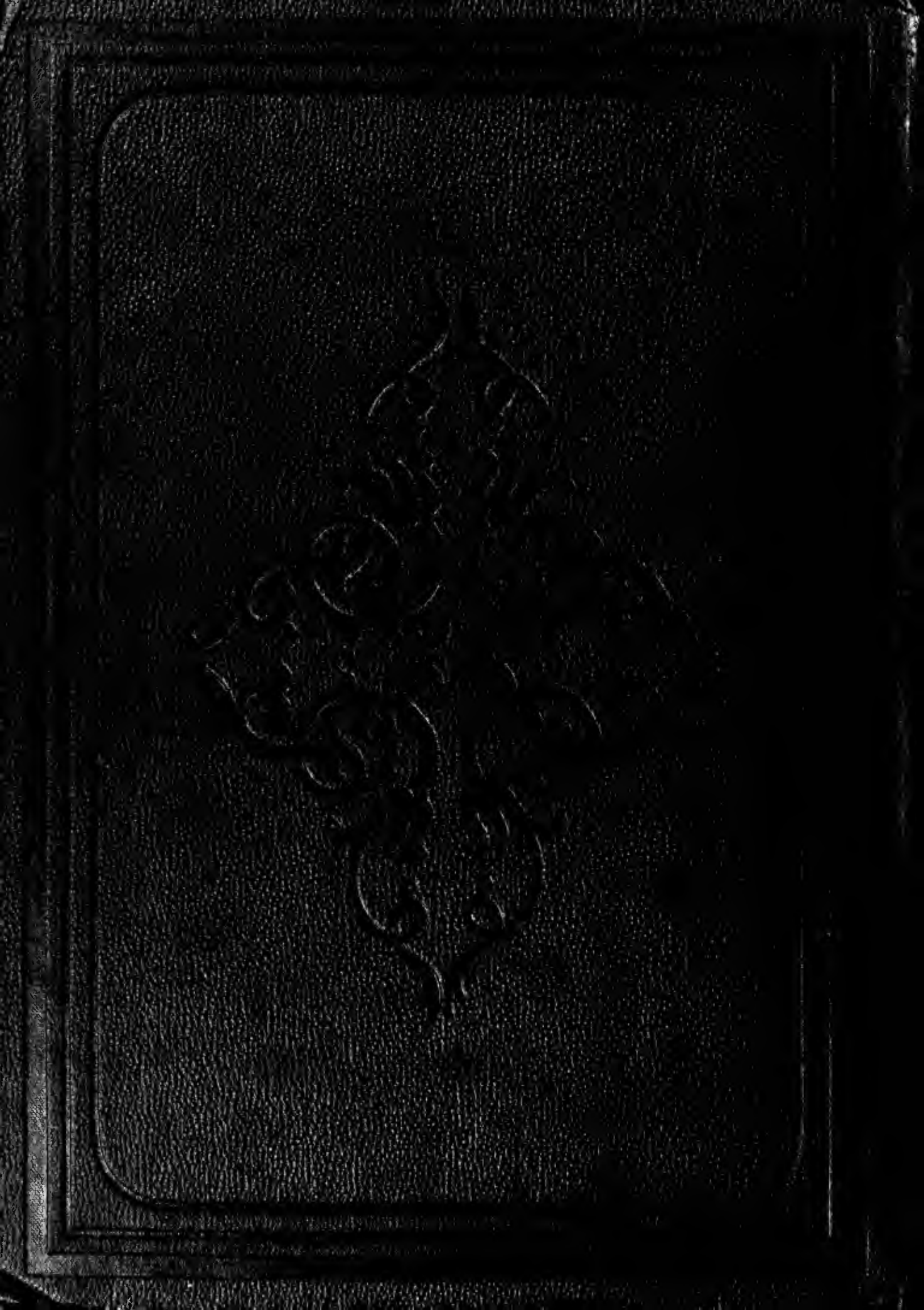
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